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# HiSPA BRICK MAGAZINE®



## Redactores / Editor board

Lluís Gibert (lluisgib)  
Jetro de Château (Jetro)  
Antonio Bellón (Legotron)  
José M. Ruiz (Satanspoet)

## Equipo HispaBrick Magazine® / HispaBrick Magazine Team

Adrian Barbour (BrickMonkey)  
Jesus Delgado (Arqu medes)  
Cody Rodrigues

## En este número colaboran / Authors of this issue

Sylvain Amacher  
Lars Barstad  
Dominique Damerose  
Beau Donnan  
Diego Gálvez  
Sean Kenney  
Andreas Lenander  
Jesus G. Martín  
Lionel Martin  
Oton Ribic  
Edward Romero  
Osvaldo Romero  
Charis Stella  
Yohei Yamamoto

## Nuestro agradecimiento a / Thanks to

LEGO® System A/S  
Jan Beyer  
Kim E. Thomsen

Puedes contactarnos / You can contact us at

[info@hispabrickmagazine.com](mailto:info@hispabrickmagazine.com)

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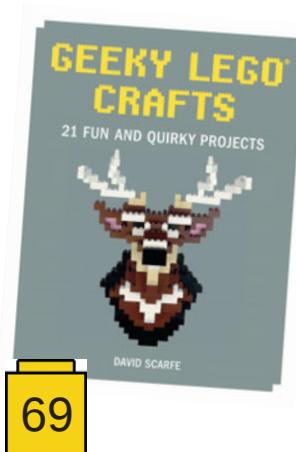
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Cover by Sean Kenney

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# Editorial

by Jetro



There is a lot going on in the world of LEGO fans and it can be hard to keep up with everything that is happening. More and more, LEGO is being used as a medium to voice concerns and opinions. At the same time there are those who would rather keep their LEGO hobby separate from the daily turmoil, a safe place to retreat to and have some away-time from everyday worries and cares. In either case, LEGO is a means to express creativity, and our hobby remains an active way to feel good (or better) about something.

Whether you prefer to experience your hobby as an individual builder or as part of a collective group on social media or in physical meet-ups, for most of us the LEGO hobby has an important social dimension. For us at HispaBrick Magazine, that social dimension is primarily our magazine ('ours' in the sense that we put a lot of work into it, but it is of course very much 'yours' as well) and to a lesser degree our blog and social media channels. Putting together each new edition of the magazine means we work together as a team, but we also 'meet' a lot of passionate LEGO fans who collaborate with interviews, articles, or by helping out in such areas as translation and proofreading. It is truly inspiring to talk to and work with fans from all over the world, and no matter how small your contribution to any of our editions, we hope you know how special your participation is to us. We look forward to meeting many more of you and we are already working on new and exciting collaborations for future issues.

Of course there is also a more physical dimension to our hobby. Aside from enjoying every minute of the time we spend reviewing sets or simply building for the fun of it, we are also putting the finishing touches to the builds we will present at our annual HispaBrick Magazine Event. This year we have also been present at a few other events throughout Europe. Never enough, but always a great opportunity to share experiences and establish new connections. You are of course invited to come and visit us at our event, and we hope to get to know more of you either at some other event or working together on one of our many projects.

This edition also contains a lot of material from another event we attended this year: the LEGO Fan Media Days. You will no doubt enjoy the insights we gained in our interviews with several departments inside LEGO. In the wake of this special event HispaBrick Magazine has also been categorised as Recognised LEGO Fan Media (RLFM instead of RLUG - Recognised LEGO User Group) and we hope this will allow for a better understanding within LEGO of our activity, and ultimately also give us more and better tools to continue generating interesting content for Hispabrick Magazine.

Jetro  
on behalf of the Hispabrick Magazine Staff  
#



**New HispaBrick Magazine® logo COMING SOON!!!**





# Interviews

## Interview: Sean Kenney

By HispaBrick Magazine®

Images by Sean Kenney



Sean Kenney is a renowned, award-winning artist and “professional kid” who has used LEGO® pieces to design and create contemporary sculptures for high-profile clients, major corporations, and venues around the globe for over 10 years.

**HispaBrick Magazine:** How did you get started with LEGO bricks? What led you to start building with LEGO bricks professionally?

**Sean Kenney:** I've been building and playing with LEGO toys my whole life. I was a total “LEGO maniac” when I was a kid, and LEGO toys were usually the only toys I ever asked for when my birthday would come around each year. I kept building LEGO models all through childhood and even into my teenage and adult years. My models slowly became more involved and elaborate as I got older, and eventually I started building LEGO models professionally. Now it's my full-time career.

**HBM:** Do you use other media, aside from LEGO, to express your art?

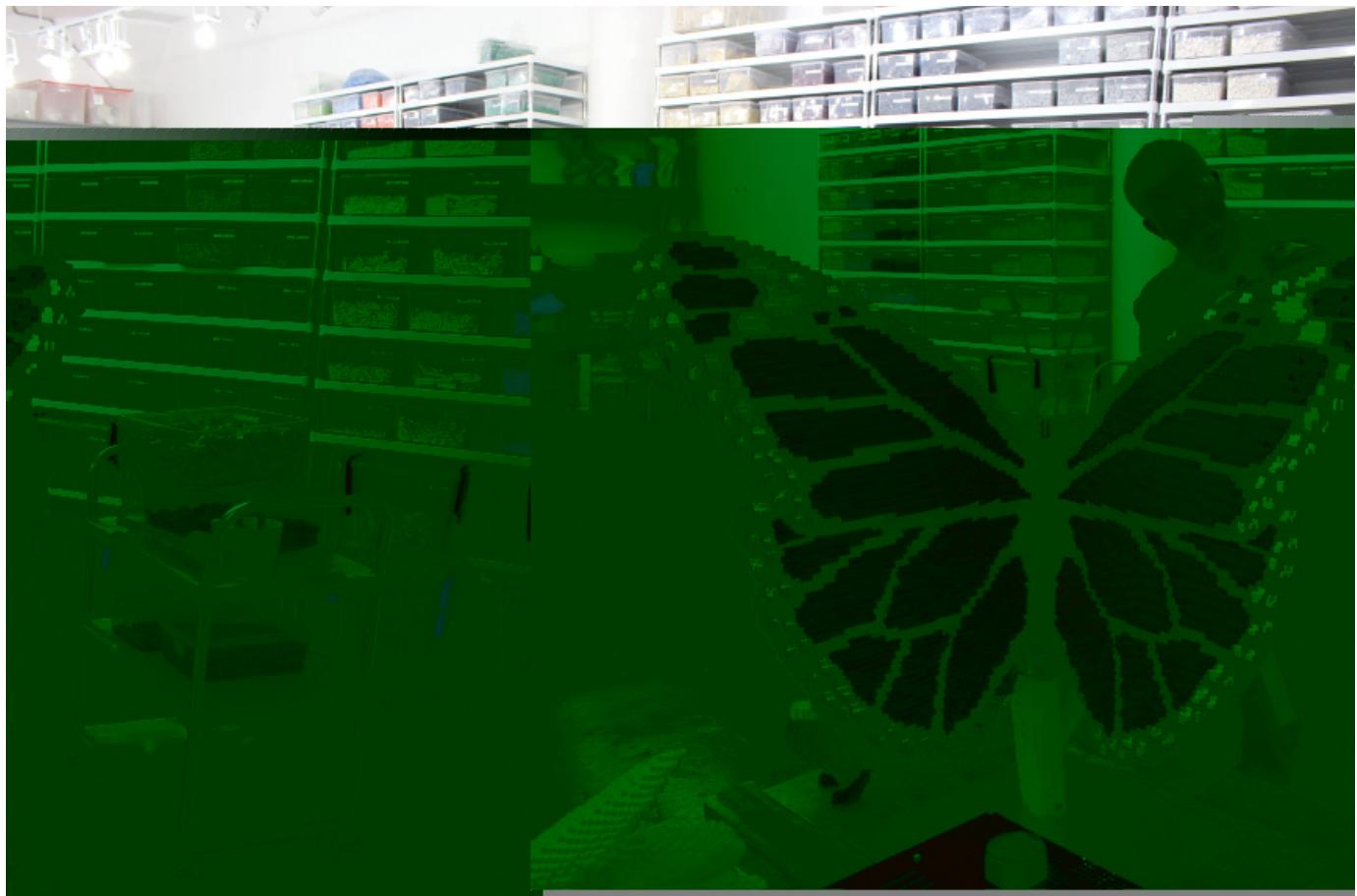
**SK:** I'm self-taught. I was always drawing as a kid and was a published cartoonist by the time I was a teenager. I took a few fine art classes in college but just for fun, and became a graphic designer during the dot-com era but again, just always figuring it out as I went. :)

**HBM:** How do you solve structural issues to allow your work to support so much weight?

**SK:** All of the sculptures are steel-reinforced, fully glued, and then coated with a special UV-protectant lacquer to protect the plastic from the rays of the sun. They're also bolted down to the ground to protect against weather and vandalism.

**HBM:** What is more complicated: representing facial features or creating complex geometrical shapes?

**SK:** The most challenging thing is to create curved shapes with those hard little plastic rectangles. Making something round and curvy like a shoe or a ball can be tricky, but the most complex thing is to create people's faces. I was commissioned to build sculptural portraits of two brothers and it took an entire summer... We all read so much into facial expressions that you can move one piece and suddenly a face changes from looking depressed to looking bored. I often need to build and re-build a face many times to get the subtlety of the subject's character and their expression just right. Unlike traditional sculpture, you can't just carve out a shape or add to a surface. You have to think ahead as you're building upwards linearly. It's very tricky at first, but once you get the hang of it, it's very rewarding to build something organic.



**HBM:** How much time goes into preparation before you start building?

**SK:** Each sculpture can have a different process... For example, the design of the Hummingbird sculpture in my Nature Connects show just "popped" in my head the minute someone said "hummingbird". I immediately had this vision of something that you could actually walk under, suspended as if by magic. Creating a spindly little nose and paper thin wings built out of chunky LEGO® pieces seemed like a wonderful challenge and, if done right, something that would look amazing. I spent about 4 weeks designing and planning this specific piece; researching images of hummingbirds in nature, choosing the perfect colors and designing the internal steel reinforcements, then about 5+ weeks building it.

My sculptures are not computer-generated. When I'm designing a model, I gather as many photographs or drawings of the subject as I can, and then use graph paper or a computer model to plan out the basic shape and size. After that, I start building a prototype with LEGO pieces, using my plans as a guide. There's a lot of visualization required, and I often have to step back and examine the model from all sides as it's coming together... often taking sections apart and re-building them! Once I have a prototype that I like, I'll rebuild it,

glued, using the prototype as a template.

Depending on the size of the sculpture, it can take anywhere from a few weeks to several months! And if the model is something that needs to be uniquely recognized, I spend a lot more time making sure it's perfect.



Hummingbird by Sean Kenney



Monarch on milkweed by Sean Kenney



Pansy and bee by Sean Kenney



Jeweled Chameleon by Sean Kenney

**HBM:** What is the largest model or sculpture you've done?

**SK:** The largest sculpture I ever created was a mother polar bear together with her cubs. The sculpture weighs 625 pounds, contains over 133,000 pieces, and measures 8 feet long and 5 feet tall. It took about 4 months for a team of 4 people to design and create the sculpture. I was touched to learn about the relationship that a mother Polar Bear has with her cubs; she raises them, teaches them to hunt, and together they have a very visible and strong love. Watching videos of polar bears with their cubs, I was taken by how almost-human they seemed. I wanted to try to capture this aspect of their lives.

**HBM:** What is your favourite sculpture?

**SK:** Perhaps my favorite model is a 50,000 piece city inspired by New York's historic Greenwich Village. [http://www.seankenney.com/portfolio/greenwich\\_village/](http://www.seankenney.com/portfolio/greenwich_village/) It was a true labor of love, assembled part-time over the course of 6 months.



Greenwich Village, New York by Sean Kenney

The model has intricate details everywhere you look, from street vendors and parking meters to historic buildings, high rises, taxicabs, and graffiti. Even the LEGO® people in the city are behaving like the combination of locals and tourists you'll find on any New York City street corner.

The model gained a lot of popularity in 2003. It was placed on display at an international design gallery in Chelsea in 2003, it was displayed at an event honoring Freedom Tower architect Daniel Libeskind, and it has been broadcast in TV and news around the world.

I'm also very partial to a small sculpture I made called "success" <http://www.seankenney.com/portfolio/success/>. It's an editorial statement on our society's overall opinion on what it means to be "successful".... and a literal depiction of myself before I left my former career to pursue creating art with LEGO bricks full-time.



Success by Sean Kenney



Careerbuilder mural by Sean Kenney

**HBM:** How do you see the evolution of the AFOL (Adult Fan of LEGO®) phenomenon over the last couple of years?

**SK:** I am always amazed to see what everyone is making, and every great creation seems to grow from the last. I think that every AFOL creation inspires another AFOL to create something great, and our inspirations all build upon those that have come before us. It would logically follow that AFOL creations will only continue to become more amazing, more inventive, more involved, and more creative! Certainly it seems to be the case if you look at what the AFOL community is creating today compared to what we were creating 20 years ago.

**HBM:** What do you think of the increase in new parts and colours in the LEGO palette over the last couple of years?

**SK:** I think another big boon to all the new creative and inventive MOCs has been an increase in really great new elements. I am a big fan of The New Elementary blog! In my opinion LEGO has been doing a really great job of expanding the set of elements in a way that makes a lot of sense as a platform and a system of shapes. We all lament the era of BURPs and POOPs, and I think LEGO designers have taken to heart the idea that expanding the pallet of elements needs to be done in a way that is flexible and formulaic. I describe this to parents and non-AFOLs as "lots more basic shapes", and explain that "everyone knows that LEGO makes rectangles; now they also make all kinds of circles and triangles and cylinders and things."

If you think about it, that's really what's going on: Lots of new ways to connect old things, lots of new variations on existing shapes, etc. It's perfect.

**HBM:** Which part would you like LEGO to produce?

**SK:** I am happy with what they make! I like the "forced limitations" of working with what exists... That's the whole point of trying to build something with LEGO pieces; to try to render something with what you have available. If I had a magic wand that could make new imaginary parts or to recolor parts to whatever I wanted, I don't think building with LEGO would be nearly as much fun.

**HBM:** So far, you are the author of 8 children's books, do you intend to make a book for an adult audience?

**SK:** Yes! My ninth book, "Sean Kenney's Amazing Creations" (working title) is currently in production and scheduled to reach stores in late 2017. It will be a large (375 page) collection of the many varied works I've created over the years, from skyscrapers to bumblebees and everything in between. In the book I talk about how I make my creations and show my process behind-the-scenes. I talk about "why" I make my creations and share decisions I make along the way. (Or funny anecdotes :). It's written on a level that both kids and AFOLs can get something out of it.



Times Square by Sean Kenney

**HBM:** Tell us about your latest exhibition. Will we be able to see it in Europe?

**SK:** My traveling exhibit Nature Connects is all about connecting you with nature by giving you a good excuse to wander a botanical garden, zoo, or arboretum while discovering my sculptures that speak to the interconnected aspect of the natural world. Nature Connects is foremost an educational platform and secondarily a means of artistic expression. I aim to showcase the connections found in nature and the beauty of nature, because just as LEGO® pieces interconnect, everything in nature is interconnected in a delicate balance.

And yes -- Nature Connects is coming to Europe in June 2017! We will be announcing the schedule on [facebook.com/seankenneyart](https://facebook.com/seankenneyart) and on [seankenney.com](http://seankenney.com) in the coming months, so I can't spoil the surprise just yet. :)

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# Interview: LEGO® Technic

By HispaBrick Magazine®

Pictures by HispaBrick Magazine® and LEGO® System A/S

HispaBrick Magazine® has always been very engaged with the LEGO® Technic and LEGO Mindstorms themes, and from the very beginning we have published articles about these themes. It seems that this passion for Technic is not only appreciated by the fans, but also by the LEGO Technic team. That's why we were very excited when Andy Woodman, Senior Design Manager of LEGO Technic, asked HispaBrick Magazine for an interview. We had a great time with him and we got very interesting answers to our questions.

**HBM:** The first Technic models were built with Technic bricks. Several years later the beams appeared in the LEGO catalog. What benefits does building with beams have compared to building with technic bricks?

**Andy Woodman:** The beauty of this system is that we can build closer, we can build more structures and we can build more interesting and structural functionality. It gives us a real smooth effect for our models as well, but that's not a deliberate thing, it's just the result of that. The main reason for starting this beams system was to be able to get these structural connections and be able to build more interesting structures. And by creating these beams we were able to take it a step further than the brick based Technic system.



**HBM:** Why are beams based on an odd number of holes?

**AW:** It's to do with the geometry of how things are created. Odd numbers give us the ability to create triangular systems and solutions and also means that the way the system has been mapped out works so you can create structure and building possibilities. And that's why it is different from LEGO System, but as you can see, the cool thing is that there is always a way to make LEGO System work with LEGO Technic and vice versa.

**HBM:** Is it also because of symmetry?

**AW:** Yes, because for example you would want to have a shaft run down the middle of something, normally, so if you have 4 holes rather than 3 holes you will always be one off. By having an odd based system you always have the ability to run gear wheels etc. where you want them to be. So there are a lot of system reasons why it is odd.



**HBM:** When designing new technic parts, Do these new elements need to follow the same rules as any other LEGO brick?

**AW:** Yes. LEGO systems in general, whether System or Technic, have a set of criteria for each element that follows a grid and there is a grid for LEGO Technic just as there is for LEGO System. But there is a crossover: the holes in the beams match up with the way you can place studs so when you place studded snaps into an element and then use a System piece you can connect them together. The system has been designed to be compatible. That means that when our element designers create new LEGO Technic elements they have to work with all the other LEGO Technic elements; they have to fit within the geometry of our system and they will also work with the relevant System elements. So there are a lot of layers for designing new elements.

**HBM:** To what degree is the appearance of new Technic elements motivated by the needs of the Technic team?

**AW:** We are the drivers of this platform. We share this platform a little bit with MINDSTORMS. We also share it with construction, with the figures they create and they have their unique needs and we have ours as well, but the cool thing is we also share our platform with LEGO System so a lot of the play theme based models are using a lot of technic in terms of being able to make functions and being able to make stable models. They use a lot of Technic and that means that when we are creating elements then sometimes there might be an element that is created by a System based project which interacts with a Technic beam and that might be something that we can use later in our models, but most of the time most of the elements we create as LEGO Technic are created by our team and driven by our needs. But there's always a lot of sharing of pieces.

**HBM:** Is it more difficult to design models with pneumatic or with electric functions?

**AW:** They both bring their own complexities. They are obviously more complex to design than a model that doesn't have either of those. The pneumatics means you have to run the tubing through the model and you have to be aware of how the tubing will go and how they run through the model so someone else can build it. When you are using the electronic components then there is of course a lot of testing with that

for the lifetime testing of the model. Do the gears run freely, do the gears have enough energy from the motors, how do the clutches work in the model and making certain that the kids can't hurt themselves by driving these models. Each one of those has its own complexities and they are more complex than using just a normal System model. But the designers are well versed in these matters now and they have the extra time they need to be able to do those things.

**HBM:** How do you do structural studies of the models designed?

**AW:** A lot of it is based on the designer's knowledge. Our designers have a tremendous amount of knowledge of engineering principles. Most of our designers have been building with Technic for quite a long time so they have built up knowledge over the years of building models. When it's a model like the Claas Xerion they are trying to catch the authenticity of the real model so maybe some of the hints about how the chassis is created on the real tractor will influence the way that they lay out the model of the tractor.



And then of course when we get to sketch models we do a lot of testing with them. We do lifetime testing of models and there will be a lot of robot tests in terms of the structural stability. We also do the same as with the System models: we have a mechanical stress test to ensure the models are stable if you want to pick them up and move them around and play with them, and general play testing – kids playing with models, driving them around, using them as they would in their own rooms, watching them play and understanding how they play with the model so as to identify the need of our model. So if we take a model to a kids test and the kids want to do a particular thing with it, and it's not something we thought about, then we'll go back and we will try to work out how to accommodate that. So there's a lot of testing.

**HBM:** Do you apply changes on the designs, based on these studies?

**AW:** Yes, every time we take a model for a test we hope that it will pass, but it might not, and that means that the designer needs to have the space to loop that model. Whether it fails the lifetime test or whether it fails the kids test, it's the same outcome: it means the designer will go back, think about it, find a solution and go back to test it again.

**HBM:** The 4958 Monster Dino is an example of a Creator set that is very much a Technic set. Who designed that set (the Technic or the Creator team)?

**AW:** That model is a Creator model and it would be a Creator designer who takes it and makes it, but – and this is the same whenever you see a model that has a lot of Technic in it (like the flying fortress in LEGO® Chima, which was a phoenix and that model is very Technic heavy) – they also come and talk to the Technic designers and say: "I've got this idea, can you come and help me with this", because our designers really

know our system and they know how to make mechanisms and it can save the other designers a lot of time.



So for all new designers who come into LEGO, we have 2 Technic designers that will go and give some basic training as to what our system is about and how to use it, but the preliminary message is basically: if you get stuck or want to try something, come and talk to us. So we often get System designers coming by saying "I've got this idea for a mechanism, how do I do this?". Or "I've built this, is this the best way?" We encourage that and Marcus, the designer of the Bucket Wheel excavator, is well known in our team and he has always got a line of young designers next to him asking for help. It's nice for our senior designers to be seen as experts who can be approached for advice.

**HBM:** According to the information posted on the webpage for the new 42056 LEGO Technic Porsche, this set is part of a "new LEGO Technic concept". Could you define what this concept is about?

**AW:** We've got the traditional second half year LEGO Technic line-up and we have really pushed the boundaries for these models as much as possible, so this year's lineup has a tremendous amount of authenticity in the Volvo and the Claas tractor and then we add this massive Bucket Wheel Excavator, the biggest model we have ever made and definitely the biggest box we have ever produced. And then on top of that we have this Porsche GT3 RS.



This model gave us the opportunity to do something different from the other models. So we still have the great models which are absolutely packed with functionality, lots and lots of building, but we wanted to do something that maybe appealed to a different type of person. It is still very much a LEGO Technic model, and there will be a lot of LEGO Technic fans who will want to get hold of it and build it, but it also appeals to maybe the collectors of real Porsches, or somebody who owns the real car, or somebody who has always wanted a Porsche, but maybe can't afford it, but now they can get hold of this model and they can build their own, which is even cooler.

So to do this concept we wanted to have a partner who would lean into us and who would really contribute to this, and with Porsche we've been able to work with their design team while they were designing the real car, get a lot of input about what they wanted to see in the model, and then we've been able to capture that input and put it into a book as well. So when you are reading through it and building the model car you have the ability to understand the relationship between what you are building now and the real thing and you get a bit of a design story between the real product and the car. To do that we created this concept which sits above our existing portfolio. It's not that it's better or more difficult to build or anything like that. It's just different from what we have done previously and it's a new niche, a new concept, and we wanted to make sure that we tried to make it as inline with the real product as possible, so we have very special packaging, you have the feeling that you are opening something really special. The graphics on the box are very different from our traditional packaging. So from the moment you see the box, take the lid off and start to build it you get the feeling that it is something different. It's not that it has more elements or is more difficult, it's different. Something a little bit special.

**HBM:** This year the size of the sets breaks all previous records. Are we getting to the upper limit of what is possible with LEGO Technic as far as structural integrity is concerned or is there still room to grow?

**AW:** You can build a small model that is unstable. It's all about the way that you create the model. The way you put structure into the model with the elements that you use. By bracing, by cross structures and by locking down you can make a model which is very stable, and at the moment we have got a whole series of new frame elements which we are using and that allows us to experiment and to go a little bit further than we have before. There will always be a limit, but it will always be limited by the way that we think about the structure, so we could make models that were way bigger than these that were very structural if we made them in the right model type and in the right way. The question is, I don't think we can find a box big enough to put all those elements in because this is the biggest box we have and it is literally the biggest LEGO Technic model we have done. It is just short of 4000 elements and it's a tremendous building experience and we are really looking forward to seeing people build it. I'm not sure if we can go any bigger at the moment, because we couldn't sell it, but we could absolutely build a bigger Technic model. If it's the right model and it's built in the right way you could build something as big as you like, really.

**HBM:** LEGO has been bringing out licensed Technic sets for some years now (Mercedes), and this year there are several from different brands (Claas, Volvo, Porsche). Why are there more licensed products now and is this a trend in LEGO Technic that you consider to be an important direction?



**AW:** We are always trying to make sure we are as authentic as possible. We want to bring our fans the coolest, best models that we possibly can, that are packed full of the things you guys want - you want the challenging build, the authenticity and that amazing functionality where you have to think

"how the hell did they do that?" and we want to push that all the time. And sometimes that means we build an amazing model which is a version of something like the Bucket Wheel Excavator - this is our interpretation of this kind of machine. We are very much inspired by the real machines, but this is our version, so there is no right or wrong about this one. But with something like the Claas tractor, we chose the coolest tractor with the most functions. Most tractors are very cool, they are very impressive, they are very big, they've got small wheels at the front, big wheels at the back, engine, cab, you can add whatever implement you want, but that's it. That's really cool, but with the Claas Xerion there is even more. You have the 4-wheel steering, you have the different steering possibilities, the rotating cab. And to be able to do that model means we have to talk to Claas and see if they are open for this possibility. For all of the licenses that we use we have a collaborative approach. We don't do a license and say "thank you very much for the pictures, we'll go our way and make the model". We are very much involved with the design teams and the people who are creating the real machines, because we want to try and capture as much of that as possible and bring it to our fans. So the designers of the Claas and the Volvo have been to the production line, they have seen the people who have designed the real thing and have talked to them, and the same goes for the Porsche - they've been to the production line, they have seen inside these machines and they have been able to capture as much of that as possible and bring it out to you guys.

That is not to say they are an exact replica of the real thing, because these are LEGO Technic versions of the real machines, and I think sometimes that is overlooked by a lot of people. We are not there to make an exact replica. We are there to make a LEGO Technic version of these real machines, so it is about capturing the essence of the design and functionality, but remembering that it is still built with LEGO Technic. We really want to make the very best LEGO Technic versions of these things. It's a challenge. We don't do licenses for the sake of it and we don't do licenses if people approach us. We very much look at what that opportunity is and what it means to us. So you will see more licenses, but they will be used in a sparing way, because LEGO Technic is about authenticity and functionality so it's very much about matching those two real world partners.



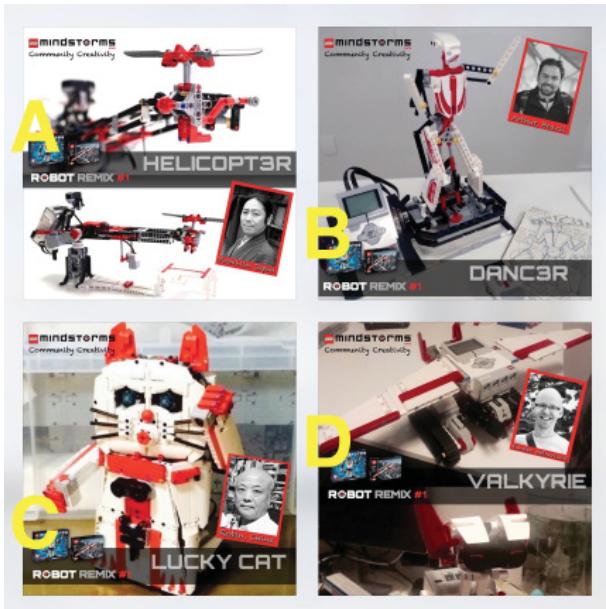
**HBM:** This year (as has happened on other occasions as well) there has been a set that was announced in traders catalogues and toy fairs, but that was finally not marketed (42051 - Airport Rescue Vehicle - there are some images available online so the set was definitely developed). Why does something like this happen? What happens to such a set?

**AW:** The fire truck has been developed and for various reasons its launch has been delayed, but it's a very cool model, so who knows where it will turn up next...

**HBM:** Over the last couple of months several combination models of an EV3 set + Technic set have been published under the name RobotRemix (and more are to follow). What is your opinion about this initiative? Are there synergies between Technic and MINDSTORMS beyond the efforts of fans?

**AW:** I think it is really cool. LEGO® Technic and MINDSTORMS is the same platform. We use the same elements and you can interchange the whole thing. There is absolutely no reason why you can't make a MINDSTORMS equipped Claas tractor. I'm sure someone will at some point completely automate a version of the Claas tractor and that will be really cool. Because they are completely compatible I look forward to seeing the opportunities. Philippa (ed: the MINDSTORMS Community Manager) was here earlier. We are in the same building and very close to each other. We know what's going on with each other's products and we use the same platform so I think we should encourage that cross use.

**HBM:** This year there have been axles in different colours. Is this a trend to colour code axles in the same way pins are colour coded or is this an aesthetic change for specific purposes?



**AW:** It's related to the building system. We are always trying to make the most amazing models with the coolest functions, but at the same time we need to be able to make a challenging build - this is LEGO Technic, it's not an easy-build system - but we try to make it as easy as possible for you to get it right. That means that in the chassis of the Porsche or the tractor there are lots of colourful parts that enable you to make sure you are holding it the right way round and you add things at the right end, or they are there to make sure you choose this axle and not that one. This year we have launched both even axles in red and odd axles in yellow, which is an addition to the black and grey we already have. That means that the designers have more freedom now to make sure you pick the right axle when you build the model. You'd be amazed at the consumer call rate we get because they confuse a 5M axle with a 7M axle. In the past both were only available in grey. The designer had two choices: either not use one or the other, or find a way to use it in a very clear way and even then there was confusion. So to make life better for our consumers we introduced these secondary colours and that means that if the designers use a 5M axle in grey they will use the 7M axle in yellow so there is always a differentiation.

I know this upsets a lot of hard core users because they feel the model becomes multi coloured, but if you look at the models of the second half year you will see that from the outside of the model you can't see that. From the outside of the models the designers always work really hard to make sure that you don't even notice that, but when you are building the functionality on the inside of the model they will make it as clear as possible so you can understand how to build that model.

**HBM:** What criteria do you look for/follow when considering inviting someone to become part of the Technic team? (i.e. what should I do if my dream job is to become a Technic designer?)

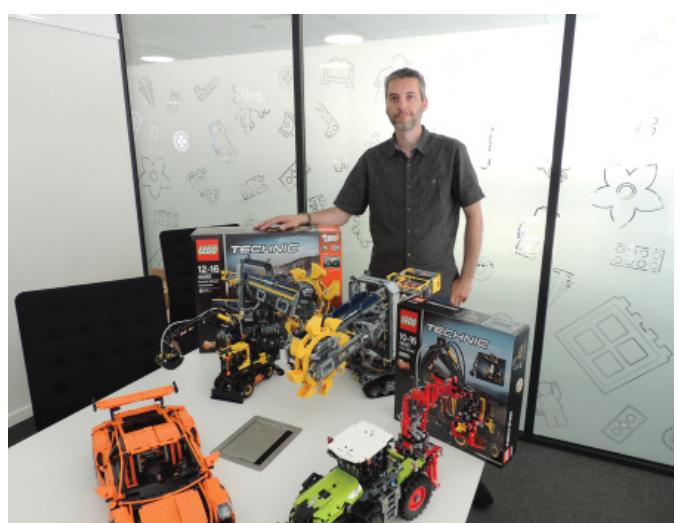
**AW:** If you want to be a designer in LEGO, the best thing I can recommend is that you train to be a designer. Take on all the courses and possibilities you have. If you are still at school, then follow a career path of art and design. If it is something that you really burn for, if it is really a strong passion for you, then follow that path and become a designer. And then when you graduate and become a designer, you have the opportunity to see if there are any openings at LEGO. If there are not, then you still have the ability to become a designer and maybe later you can look for opportunities at LEGO, but that passion for LEGO, building and creating models, keep that going, because that is going to be a really cool part of your possibility to join LEGO.

**HBM:** Is engineering also an important factor for the Technic team?

**AW:** It's not essential because we have different roles within the Technic teams. Some of the guys are heavily into the engineering side of things - e.g. they understand the way gears work, what they need to make different drives, etc. - and then there are designers who really understand the aesthetic of the model, and in that sense our team is very much collaborative. So the designer who is very much into the aesthetic of the model can help the designer who is into the engineering of the model and vice versa. There is always one designer who is responsible, but our models are always very collaborative and designers are always helping each other out. What's driving LEGO Technic forward is that our designers are very open to somebody else giving them an idea, and that's very important from a designing point of view and something we really nurture in our team.

Whenever we look for people we bring them in, we understand how they work. It's not just a case of taking the very best designer, but rather the very best designer that will work in my team. It's not just the very best person sitting in a corner to make a model. They need to be able to interact.

#



**Andy Woodman**  
Senior Design Manager of LEGO Technic

# Interview: LEGO® Ideas

By HispaBrick Magazine®

Pictures by HispaBrick Magazine® and LEGO® System A/S

CUUSOO, LEGO CUUSOO, LEGO® Ideas... different names for one idea. The opportunity for fan-based sets to be produced by LEGO. Hasan Jensen, Community Specialist of LEGO Ideas (LCE Team), answers our questions about one of the most successful programs that LEGO has ever created.

**HBM:** It all started with a project submitted on the Japanese website CUUSOO (21100 - Shinkai 6500 Submarine), when it reached 10,000 supporters. How did CUUSOO contact LEGO?

**LEGO Ideas:** In fact, the Shinkai only reached 1,000 supporters, since that was all that was required at the time for a project to be considered for review. LEGO CUUSOO existed only on the Japanese market and in Japanese.



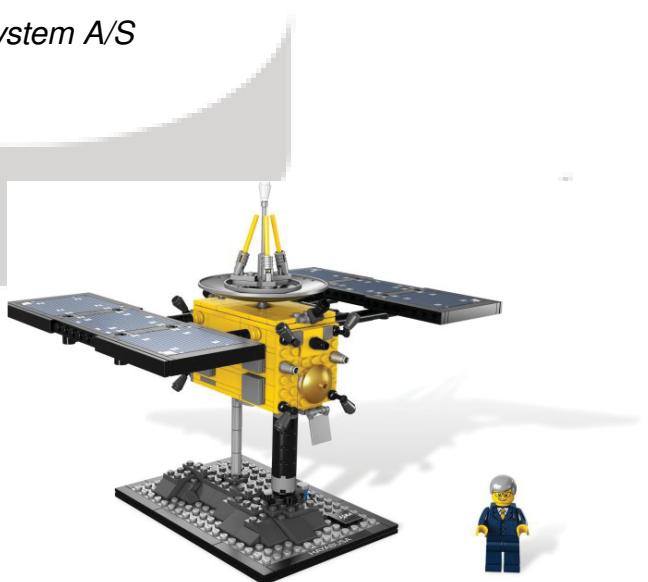
The founder of CUUSOO SYSTEM, Kohei Nishiyama met former Head of New Business Group, Paal Smith-Meyer around 2007. In 2008, they launched LEGO CUUSOO in Japanese as a pilot project. This was followed by the international beta version in English in 2011.

**HBM:** Why did LEGO decide to accept this project?

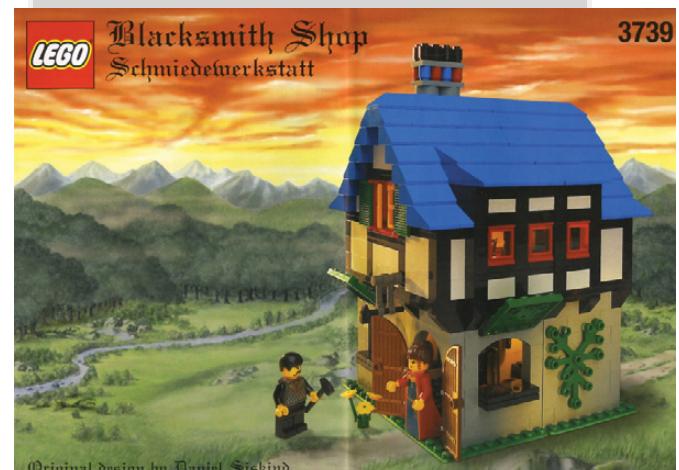
**LI:** The LEGO Group saw it as a way to involve LEGO fan communities to generate ideas for new and exciting LEGO products. We were aware that there were many talented designers out in the community that all had fantastic ideas and built beautiful models, while The LEGO Group had in the past also had some successful experiences in involving the LEGO fan community. We were also inspired by a case study of the Japanese company, Muji, who used CUUSOO to crowdsource ideas for their potential products.

**HBM:** After the first project another one (21101 – Hayabusa) reached 1,000 supporters. Was this the moment when LEGO saw that there was a new market behind fan models?

**LI:** Since Hayabusa was submitted to the Japanese pilot program, it also only reached 1,000 supporters.



The LEGO Group has seen market opportunities behind fan-inspired models since the Blacksmith Shop released in 2002, as well as collaborations with the LEGO MINDSTORMS community, LEGO Train builders, etc.



LEGO CUUSOO was an experiment in how we could open up these opportunities to the broader public, and begin to consider and release fan inspired products at scale rather than as one-off projects.

**HBM:** The next step was LEGO CUUSOO under the CUUSOO site. Was it easier than creating what currently is LEGO Ideas?

**LI:** Each project presents its own individual set of unique challenges. LEGO CUUSOO was a brand new experience at the time and provided a lot of challenges and learning experiences, which naturally helped evolve LEGO Ideas into what it is today.

**HBM:** Did LEGO expect the success and the level of the models submitted?

**LI:** It started as a test and exploration of opportunities, with recent years having demonstrated that this is a sustainable concept. We are very pleased that so many people take the time to submit projects of high quality.

**HBM:** Three projects were launched under the LEGO® CUUSOO brand. All 3 were licensed (Minecraft, Back to the Future, NASA). Was this fact a difficulty in making the sets a reality?

**LI:** Unfortunately, we can't comment on licensing partnerships.



**HBM:** Why did LEGO finally decide to open LEGO Ideas?

**Hasan Jensen:** Having experienced the positive way in which the LEGO community received and engaged with LEGO CUUSOO, that made continuing this community experience an important decision going forward.

Historically, The LEGO Group has been an industry leader in working with fans, and it made a lot of sense to create the LEGO Ideas platform to create mutual value for both our fans and The LEGO Group.

**HBM:** Once a project reaches 10,000 votes, what is the internal review process?

**HJ:** Even before a project reaches 10,000 votes we are already collecting data. Every time you support a project you are asked how much you would expect to pay, whether it is hard to build and so on. That's part of the first round of information we pass along to the review board. From there they look at the different models: all models are individually assessed according to the review guidelines. Many different departments are also involved, like for example branding, to see if the IP is actually suitable for LEGO, also designers are involved to determine if it is feasible to create the model. For instance, the exosuit; that was a challenge to build as a standing model. So they check if the model can become a good LEGO model. And then there is obviously the business side to see the reactions of the different markets and see if that is something they are interested in; how people react to it. And that data we receive at the start can help give them some idea of what the expectations of the market are. Obviously there is a lot of back and forth between everyone to determine what the right products are and then to see if it is possible to get the right licenses. Sometimes there are conflicts - so these are all small elements that need to be sorted out in the review process before we can announce anything.

**HBM:** Do all the projects follow all the steps? Or are there any milestones the must be passed during the review to keep working on it?

**HJ:** Yes, all projects are analysed in the same way and follow the same steps in the review process. That is regardless of whether a project was in this next coming round or if it was from a year ago. They follow the same kind of process. We judge them individually. So a project that might have been from last year won't have an effect on this next one that might be similar.

**HBM:** Which are the main milestones that every project has to pass?



**HJ:** Some important steps are getting licensing approval and design approval in term of feasibility. Then the secondary elements are the design of the box, the building instructions and so on.

**HBM:** During the review process, is there constant communication with the person who submitted the model?

**HJ:** There is not constant communication, but we may pull them into the process. Sometimes they are involved in giving input on the model, but that is only after the model has been chosen. We don't make contact before a model is chosen, because then the review board cannot objectively make their decision. But after we have announced that something is going to be produced, then the fan designer would be involved. For instance, for The Maze, Jason Allemann visited us in Enfield to shoot some videos, to show the maze and to do a general interview about his inspiration behind it and so on. So it's mostly afterwards that we get fan designers involved in the process.



**HBM:** Would it be possible to develop a new mould based on the needs of a LEGO Ideas project?

**HJ:** Unfortunately not. That's one of the limitations we have for the LEGO Ideas programme. As you might know, we do allow new stickers and printed parts, so that we are open to, and that is why we are able to produce new minifigures for the various sets.

**HBM:** Are you allowed to ask for new colours (inside the palette) for existing parts?

**HJ:** Yes

**HBM:** And finally a project passes the review process. After this point, what is the remaining work before the launch of the set?

**HJ:** Then it is involving the fan designer in the process, and also marketing-related activities. For example, with The Maze

Jason Allemann did a signing event in Toronto — this kind of practical elements to promote the product. We also want to get to know the fan designer a little more to learn more about them and tell the community about them, because I think they have some fascinating stories about how they became LEGO® fan designers — what they have been inspired by, the different backgrounds they have. Jason Allemann for example is a programmer by occupation, but then he is designing LEGO sets. So it's fascinating to see the stories that come out of this.

**HBM:** What is the general profile of submitter and customer of the LEGO Ideas sets?

**HJ:** Typically slightly older, but it depends from set to set, so there is not one standard. A CITY set is typically for a certain age range and a Technic set for another age range, but LEGO Ideas sets cover a wide range and varies. I guess you could say it's for middle aged kids and upwards, but because there is also an adult fan community, we know those who submit are over 13, but the majority over 18.

**HBM:** Is there a limit of LEGO Ideas sets per year?

**HJ:** No, not specifically, but historically we do have an average of 3-4.

**HBM:** Do you try to keep a balance between non-licensed vs licensed sets?

**HJ:** There is no rule about that. It's about creating the best possible set that people will also be excited about, whether that's an IP or an original concept. We do want to promote creativity and originality, but at the end of the day we are not limited by that factor. There is no quota to reach.



**HBM:** If a model does not pass the review process, could it be submitted again on LEGO Ideas?

**HJ:** Yes. Of course we don't know if it will reach 10,000 again, but in general people are allowed to re-submit their projects if they don't reach the necessary number of votes.

**HBM:** And what if it reached 10,000 votes, but didn't pass the review. Can they resubmit it?

**HJ:** We don't actually have a policy about that. We haven't experienced that yet, but I don't think we would have a problem with it. Sometimes a reason why it might be rejected could be bad luck, bad timing. As an example, some years ago the license for Doctor Who wasn't available. Later it became available and then we allowed people to submit their projects. In that sense, anything can happen and many factors have to play together to make that possible. They are welcome to resubmit and then maybe the timing will be better and maybe it will pass.

**HBM:** Is there a limit of units produced of each set? Why?

**HJ:** That depends on the feedback we get from the different markets. It varies from set to set.

**HBM:** What is the most successful set at the moment?

**HJ:** Unfortunately I can't share that information.

**HBM:** Let's talk about licenses. How do other companies react when LEGO asks for a license?

**HJ:** Personally I am not involved in the licensing process, but from what I have heard companies are quite open and approachable. But not everybody is interested; that's just life. So far we have had some very good experiences with different partners which we are very happy about.

**HBM:** What do you think is the secret for the perfect idea?

**HJ:** The secret is that there is no secret. It's a combination of ... Creating a good product is as simple as setting it up nicely, the way you sell it. That means creating a nice picture, a good description. Then you also have to market it. Create updates to it. What we hear from many of the fan designers whose ideas have reached 10,000 supporters is that they have to work quite hard. They have to go out to different related or relevant blogs and forums and promote their projects. So for Doctor Who it could be a Doctor Who community site somewhere and maybe it doesn't have anything to do with LEGO, but they go there and say "Hey, I've created this cool LEGO set, maybe some of you guys who just generally enjoy Doctor Who will also like it". So it's about trying to sell your project. But of course you can't sell a project if it isn't very good. Of course it has to be a good model. It's about being unique. We do communicate that IPs we currently have in our portfolio have a lesser chance, because sometimes there is overlap. If we are producing a Millennium Falcon and someone creates a Millennium Falcon in LEGO Ideas, then obviously there is a conflict.

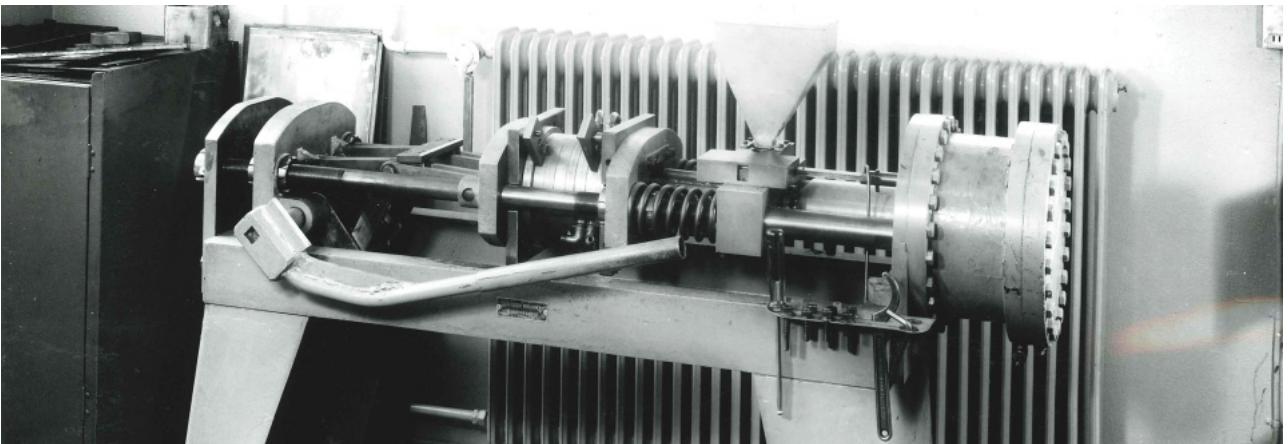
**HBM:** Without being specific, are there any projects that LEGO liked, but that didn't reach the necessary support?

**HJ:** Not really. We don't really start looking at any projects before they reach 10,000. Of course everybody has their personal favourites, but that is so subjective and it is nothing we discuss. We only focus on the projects that have reached 10,000.

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**Hasan Jensen**  
Community Specialist of LEGO Ideas



## Interview: LEGO® Moulds

By HispaBrick Magazine®

Pictures by LEGO® System A/S

Recently LEGO® recovered around 80 historical product molds during the demolition of some disused factory buildings in Billund. These moulds had been buried in the foundation when the factory was built. There have been many rumours of LEGO putting old moulds in the foundations of new buildings to prevent them from falling into the hands of competitors, the publication of this find corroborates the practice. Then again, this happened more than 40 years ago. HispaBrick Magazine® talked to Tine Froberg Mortensen to find out a little more about this find and about the life and death of a LEGO mould.

**HBM:** How long have you been working for LEGO?

**TFM:** Since January 2011

**HBM:** What are your responsibilities?

**TFM:** I am Records Manager for the LEGO Group and I am responsible for LEGO Group Archives, which is a sub department of LEGO Idea House. In LEGO Idea House, we mediate the LEGO Group values, history and development. It is my job to make sure that all LEGO departments worldwide deliver relevant material to the archives, where we file it and make it accessible for colleagues upon request. I also do tours for invited guests in the internal museum in LEGO Idea House, handle requests – both internal and external – and I have written the stories for the LEGO History website - <http://www.lego.com/da-dk/legohistory/welcome> So, in short, collecting, preserving and mediating the LEGO Group history, development and values.

**HBM:** What is the LEGO Archive?

**TFM:** In LEGO Group Archives, we collect relevant historical – and new – material that documents the LEGO Group history and development. As mentioned above, from all LEGO departments worldwide, but sometimes we also get material from LEGO retirees, collectors and other external people. We are five people in the LEGO Group Archives team. Four Archiving Assistants and me.



**HBM:** What elements do you keep in the Archive?

**TFM:** We keep lots of different material in LEGO Group Archives, for example:

- Documents, for example minutes of meetings, strategic plans, internal magazines, speeches, technical drawings, documentation regarding sales offices and manufacturing sites etc. – anything that documents the LEGO Group development.
- Prototypes of different elements – dating back to shapes for wooden toys up to prototypes for present themes.
- Products dating back to 1932. That means both wooden toys and plastic products, where we keep a certain amount of each set launched since 1949.
- We have artefacts dating further back. These artefacts are of course related to Ole Kirk Kristiansen, who founded the LEGO Group. As you might know, he moved to Billund in 1916 after buying Billund Joinery (100 years ago this year!!).
- Building instructions – from the first instructions of the mid-1960s to present-day ones.



- Moulds, so far dating back to around 1952. We haven't opened all the moulds from the newly demolished Hoejmarksvej factory yet, so maybe we will find even older moulds.
- Machines – for example moulding machines, and other machines from our closed moulding shops.
- Pictures/photographs – I believe the oldest in the collection is from late 19th century and the oldest of Ole Kirk Kristiansen is from 1911.
- Prizes/diplomas received by the LEGO® Group.
- Art (sculptures, paintings, etc.)

It is essential that material included in the archives is either produced by the LEGO Group or otherwise has a close relation to the LEGO Group.

**HBM:** What is the purpose of the LEGO Archive?

**TFM:** To preserve relevant material and make it accessible for colleagues (unless classified of course).

**HBM:** What is the average lifespan of a mould?

**TFM:** As far as I have been informed, it varies according to the complexity of the mould. Some moulds have done more than 25 million "injections", but usually the number is between 8 to 10 million.

The moulds are of course cleaned while they are in use. Usually after 500,000 "injections", depending on what material is used for the elements.

**HBM:** What happens to a mould once its lifespan is over? It is said that discarded moulds are buried under new buildings. Is that (still) true?

**TFM:** Apart from the newly demolished Hoejmarksvej factory, we know that there are moulds cast in the foundation of the Kloevermarken factory and probably also the Kornmarken factory. It was probably an easy way to discard old moulds and at the same time make sure that they wouldn't fall into the wrong hands. All above-mentioned factories are placed in Billund.



*Moulds from the demolition of Hoejmarksvej factory as they looked when LEGO got them*

At Kloevermarken and Kornmarken the moulds were cast in concrete but at Hoejmarksvej, they were buried in sand – which is why we can separate them and open them today.

When the new Nyiregyhaza factory in Hungary was opened in 2003, a time capsule was laid in the foundation to mark the building of the factory. The time capsule contained a Danish Flag, a Hungarian Flag, the layout of the factory, the latest copy of the local newspaper and Danish and Hungarian coins.

After the company stopped casting its old forms in concrete, it switched to having them melted down by a Danish steel rolling mill. This practice continued until 2002, when the steel rolling mill went bankrupt and ceased to operate.

Since 2002, obsolete moulds are shipped to the LEGO factory at Kornmarken, Billund, which organises destruction of the moulds. This also applies to moulds from our factories in Mexico, Czech Republic and Hungary. The obsolete moulds are destroyed by a "burner" cutting a hole through the moulds, melting the cavities and rendering the moulds useless.



*Mould 6 trees used for the Town Plan, which was launched in 1955*

**HBM:** Is there a specific department in charge of mould design?

**TFM:** Yes – and we have had our own moulding shops since 1953. To make sure that the moulds were of the right quality, it was necessary to make our own moulds. A few years later, we established moulding shops in Vejle (30 kilometres from Billund) and Hohenwestedt in Northern Germany, where we opened our first foreign sales office in 1956. In 1974, we established a mould shop in Switzerland. They are now all closed.

The Mould Manufacturing Workshop department has two functions: mould qualification/testing and mould making. The Mould Qualification department tests the moulds the company receives from its four external mould makers, which have supplied moulds since 2005. It also adjusts moulds or repairs worn moulds, which are still suitable for use.

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# Interview: LEGO® Rebrick

By HispaBrick Magazine®

Pictures by HispaBrick Magazine® and LEGO® System A/S



The Rebrick concept has completely changed from the initial idea to the actual site. We are going to explore the initial idea and what's behind this change. To do this, we interviewed Mette Frøkjær Hansen from the Rebrick team. Although she is quite new in the team, she had the knowledge to shed some light on our questions.

**HBM:** What was the reason to start ReBrick a few years ago?

**Mette Hansen:** I actually started here in October, so that was way before my time, but back then, essentially it was trying to enable people to bookmark things and create their own galleries on sort of a LEGO® site so we would have a more centralised place for all the cool things that you find online. It was kind of like an old Pinterest. A lot of other pages do that very well and way better than ReBrick did, so what we discovered was that when we had building challenges on ReBrick, that's where we got engagement and what people were really excited about. That's why it was decided to streamline the concept, let other sites that do link sharing and galleries do that because it works so well on Flickr and all the sites that are out there, and focus on the challenges. So that's what we are doing with the new ReBrick we launched in March this year. It is still early days and it is really exciting to see how it is evolving already.

**HBM:** Regarding those other pages that link content; at the beginning, did LEGO want to compete with these pages or to complement them?

**MH:** I wasn't part of the strategy back then so I honestly don't know what the original strategy was, but knowing LEGO I'm sure it wasn't to compete with anyone. I am sure it was to enable people to do something that we felt was not possible at that time, trying to facilitate that. And then learning as you go along that we are not up for it, it doesn't make sense, they just do it better. We should let them do it and focus on what we can do well. And we learned that that was the challenges.

**HBM:** How do you evaluate the success of the first period of ReBrick?

**MH:** Being part of LEGO you are always being measured on reach and things like this, I'm sure that was also a metric back then. I could imagine something like "how many links are being shared", but it was also a big success criterion to make sure to celebrate the builders, I guess the intention was that if you could facilitate that and get things into one gallery and on one page then you would have a place where you could get totally inspired from all the different kind of builds that people do. To my knowledge I would say that was the success parameter back then. And to some extent it was that, it was just difficult to keep the momentum as other platforms were evolving so well whereas ReBrick really unfortunately didn't at that time.

**HBM:** Did you get the audience you set out for at the start?

**MH:** I would think yes. We wanted to be able to capture people who were really interested in LEGO and fans basically. People who were good builders and users, but also people who were interested in browsing. And we did see that, so I would say yes.

**HBM:** Recently ReBrick changed to a contest platform. Why did you decide to make this change?

**MH:** It was because we could see that on the old ReBrick people were really into the challenges. And because we are LEGO we are able to give some prizes that are different, like limited edition stuff or behind the scenes. Because we have access to that we can deliver it, which is of course a cool thing to be able to give out. That was where it started to makes sense to us and we could see that people were really engaged. It's also an opportunity for us to work with the different product groups a bit more tightly and make sure they realise that there is this amazing AFOL community and 13+ community of builders who they can actually think of and work with in regards with what they do. We feel that it makes more sense to do it like we do it now, where we work with the product groups to figure out cool building challenges for the 13+ community that will challenge them creatively, but also give some entries that we can show to the different product groups at LEGO so they can really see that that is some inspiring stuff.





And we can use it to show to kids as well who can get inspired and see ways of playing with LEGO® and building with LEGO that they might otherwise never see.

**HBM:** How many contests do you plan to organise per year?

**MH:** This year we have 11 planned. Almost 1 a month which is quite a lot actually, because some of the people who build and participate are the same people, so there is a lot of building going on.

**HBM:** How are the themes of the contests decided?

**MH:** We work with the designers of the product groups and the marketing team to talk about what cool stuff they would like to see the community do. For example, for the Speed Champions contest we just had, they said they would love to see something that showed crazy ways of racing with race cars. So not necessarily on the track, but it could be races in the jungle or races in space - anything, just come up with what you want. We wanted to see cool races, because that's what they are about. So that's what we did with the community. We teamed up with Speed Champions and Porsche and asked people to build their dream race in LEGO Stop Motion. People built some very cool stuff and the talent is just overwhelming. Brickfilming and stop motion takes a lot of time to do; it is really difficult. And then to see such high quality. The creativity and geniality is just amazing. And we are able to actually send the winner to the 24 hour race in Le Mans in June, so tomorrow we are going to Stuttgart. There's a Brickfilm festival going on called Steinerei and we will announce the winner there. In that sense it is a really good example. It is a building contest, but it is also more than that. We can really go out there in the brick filming community and meet with these people and celebrate what they do. So we are really excited about that. And

this video will go live tomorrow on the on the LEGO social channel, and that's also a way to celebrate all the talent of those who participated. And it can show exactly what Speed Champions talks about: cool, fun, crazy ways of doing races. Hopefully that will inspire all ages to build.

**HBM:** Do you expect a certain specific number of participants? Is there a minimum number of participants?

**MH:** We talk a lot about that. It is actually difficult to set a benchmark like that because when is it enough, or when is it not enough? So for something like stop motion, that is so difficult to do and it takes a lot of time, we said if we were to have 40 entries that would be crazy. We got 38, so that was really good. We had one for LEGO Dimensions - we asked people to customise the portal for the game - for that we got around 120. So it is really different in terms of the popularity of the theme, and how difficult the entry barrier is. At the moment we are monitoring how much activity we get and then maybe in the future we can set criteria for how many we want. But for us it is more about the quality and getting people engaged. And the stuff people enter is of such high quality that we are able to share it in the broader LEGO Group and on the different social channels, so even more people can see it and get inspired by it. That is the main goal, so not necessarily how many, but we want it to be that good that we can show everybody how amazing it is so even more people can be inspired.

**HBM:** Do you follow any rules to decide the winners?

**MH:** Yes, we have really strict rules. We actually meet up with the design team and the marketing team. And we talk about the criteria, what would we like to see. So it has to be 25% LEGO humour for example - for the Speed Champions challenge it was also about humour - and building technique, inspiration, originality and creativity. So we set the rules to "this is what we are looking for" when we select winners. And we really have to do that because there are so many good entries. Otherwise it would be "They are all good, what do we choose?". So we have criteria and there is the judging panel from the design team and the marketing team and they can look at the criteria that we set up and say "that is the best one according to what we are looking for". That helps, because it is difficult to choose.

**HBM:** Teenagers can also participate in those contests, but their skills and the number of parts they have available are different from AFOLs. Do you take this into account when deciding the winner?

**MH:** When we decide the winners we don't look at age and who they are. For us it is important that it is the best, because that's what's most fair. But it is a good consideration, that if you are a teenager you might not have as much LEGO and you might not be able to do that big model that someone else did, but all the contests are also open for LDD and general digital building entries and that's where we actually see that the teenagers are really good. We had a contest for LEGO Worlds, for the game, and the participants were mostly teenagers. And since the contests are open for that too, there is a fair chance that you can build just as impressively, even if you don't have the bricks, you can also build digitally.

**HBM:** Who are participating more at the moment, teenagers or AFOLs?

**MH:** Mostly adults.

**HBM:** Do you plan to do any contests in collaboration with the registered LUGs, the community of fans?

**MH:** Yes, that is something we would definitely like to do. Right now, we have a Friends contest and for that one we teamed up with the different fan communities in North America. At the events, there will be a Friends area where we have the contest, but you can also participate on ReBrick globally. So basically we are doing it on ReBrick to allow other people to also enter even though they are not able to participate in the fan event in the US. That's one way of doing that. It is something that we would definitely like to do more of in the future. It's still early days. We are developing this and making sure that the concept works and then we can look at other cool stuff. I feel it's an area where there is so much opportunity, so many possibilities. There aren't really any limitations - it's just what you can come up with that could be fun and be cool and make sense. I hope we will be able to do that in the future.

**HBM:** What is the demographic profile of the ReBrick users?

**MH:** To be honest, we don't have a profile of the typical ReBrick user. We can see that a lot of participants are from the US, all over Europe, including Eastern Europe. We don't have an average age. For LEGO® Worlds and Ninjago it is mostly teenagers, and for animation and building stuff it is more older participants. I guess that speaks to what the theme of the contest is. If it is Ninjago, teenagers will be interested, and if it is Bionicle or Technic it's people who have that interest and they might be older.

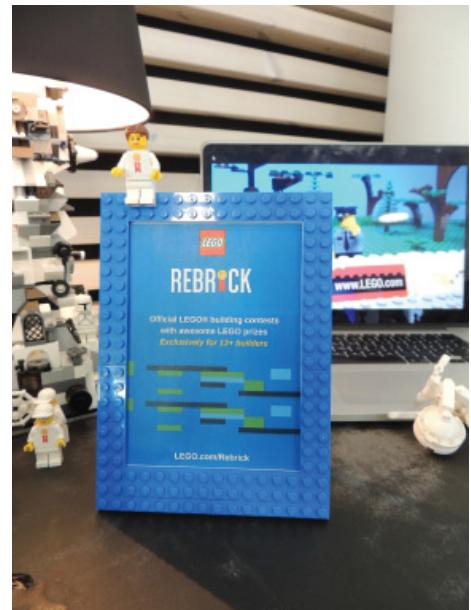
**HBM:** What about Asia? Is Asia also growing in participation in LEGO related contests and other activities?

**MH:** Yes, a little bit. We were lucky to have people from Asia in the ReBrick curator program back in the day. They were aware of the site and spread it in their LUGs. For Speed Champions we had some cool entries from Asia as well. And I got an email from a person I met over there who said that she had never done anything like stop motion before, but she thought it would look cool and she wanted to try it and she made an amazing entry. But there are some challenges, including technically. The LEGO platforms are a bit slower in Asia, and that is something that is being worked on.

**HBM:** Could the ReBrick site be used to collect inspiration for future sets?

**MH:** I doubt it. That's not what it is about. That is LEGO Ideas. Of course everybody is welcome to come and look at all the cool stuff that people build there, but it is not our focus. But we all get inspired all the time.

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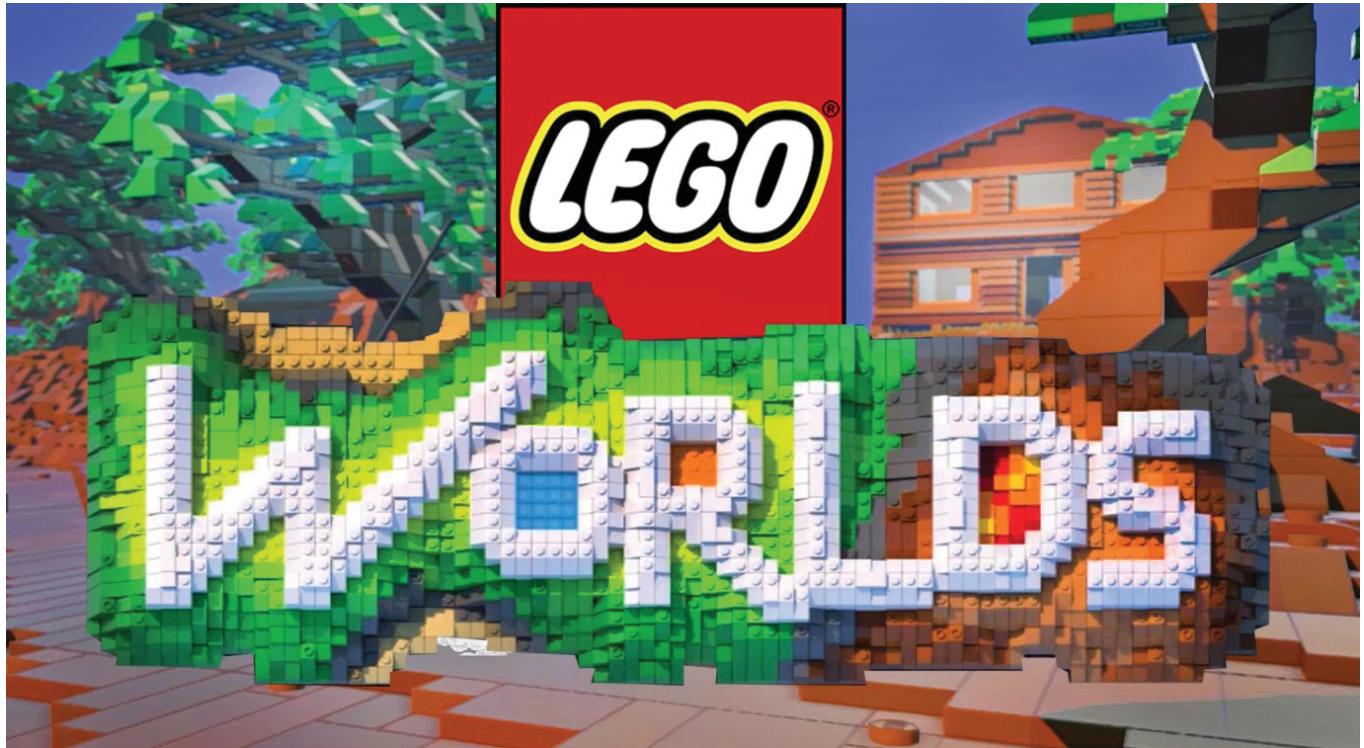


**Mette Frøkjær Hansen**  
Marketing Integration Manager

# Interview: LEGO® Worlds

By HispaBrick Magazine®

Pictures by HispaBrick Magazine® and LEGO® System A/S



Kari Vinther Nielsen is the Marketing Manager of Digital Games in the LEGO® Group. She answered our questions about LEGO Worlds, the new attempt from LEGO to succeed in the sector of the Online Digital Games.

**HispaBrick Magazine:** Why did LEGO decide to enter MMOG games in the past?

**Kari Vinther Nielsen:** First, let me introduce myself: my name is Kari - I work on most of what we call our realistic games, so that's games that really take the LEGO DNA, the bricks, the physical build into the game. I have been involved with Worlds and I'm the Lead on that, and then Dimensions and then LEGO Minifigure Online, which is an MMO. So was LEGO Universe. Worlds is actually not an MMO. It will have online multiplayer, but it is not where everybody can just join and play.

Right now in terms of experience, Worlds and a lot of our other games are what we call Local co-op, meaning that you can play together, but you have to sit on the same device. For Worlds we will add online multiplayer, and that's coming in a couple of weeks, but it's not having the whole world in one game. That's not where we are going. It's an open world game sandbox experience, so that's what it caters for, but it is also a game for kids, so we want to build an experience as a goal to see how we are going to interact and have multiplayer come into the game.

**HBM:** At this moment LEGO Worlds is under development. You can play with it, but more features will come in the future. What can players expect to find in this new game?

**KVN:** Worlds is a big sandbox where everything is made of LEGO. We decided to launch the game on Steam™ as part of the early access opportunity they have. Steam is a place where you launch a game that is not yet finished, just to collect feedback and build a game for the community and that is what we wanted to do with Worlds. We wanted to learn what the community is saying, and we are testing it with the kids on the site to hear what they are saying, and then we combine that feedback and build the game as we go. That was one of the main reasons. So right now in the game you have a very creative experience. You can explore LEGO characters and creatures, vehicles, there is a lot of great animation in the game, there are some quest types in the game, and you can build – these are some of the builds that the community are doing – this is something a community member built in the first week and it took around 40 hours. So there is a lot to do in the game and there is a lot to explore, discover, create. With the local co-op we have, you can also play together. So there is a lot of great LEGO content in one game and it is a great way to play with LEGO in a digital way.



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**HBM:** What are your expectations for this game?

**KVN:** Right now our expectations are to really polish it and get it right so we can take it out of early access on Steam™ and get it ready for what we call a commercial launch, or a bigger launch. I think LEGO® as a company really likes the game and we are very keen to see where it goes. The whole early access phase has been more than we could have ever hoped for. We had 400% more people signing up than we had anticipated. In Steam it was part of the top 10, although it was an early access game, so that was also a great compliment. We haven't done any communication around it. We really wanted to keep it under the bar, because when we first launched the game, the specs the computer needed to have to be able to run the game were quite high. So we didn't want everybody to play it. We wanted a very narrow targeted audience on Steam. These people really enjoy being part of building a game and setting up the experience you get in the game. Now it is playable on lower spec PCs and more people can play it. As a result we have had a lot of great feedback from the community, but the game is not finished yet. We are still collecting feedback and we love getting it. It is really great to see how people feel about the game, their passion, what they really want in the game. I can only encourage you to go into Steam and see what they have been doing there.

**HBM:** When is the official launch planned?

**KVN:** Right now we don't have a final launch date - not before we feel the game is really good. That is the most important thing for us, to have a really great experience out there. And we can finally do it because we didn't launch a final product: we launched a product that we wanted to develop with the community.

**HBM:** Do you think that this will be the definitive game that allows LEGO to triumph in this gaming genre?

**KVN:** That's hard to say. I think we have a fantastic portfolio of games. This is just one type of experience. We have Dimensions, which is part of the Toys-to-Life category, we have story driven games, we have adventure games ... I believe that Worlds will be a great success. And it is the first time we are doing this sandbox experience. We have done these types of games before, but this is very unique because with Worlds it sits within its own sort of territory, everything is built out of LEGO, so we expect it to do really well and we really look forward to seeing how it will go with the multiplayer element of the game and getting it out to more people.

**HBM:** LEGO computer games appear to be more successful than online games. What do you think differentiates the physical games you can play on a console like a PlayStation™ from these online games?

**KVN:** I think if you look at the whole landscape of games, kids are becoming digital natives. Kids and also adults are getting more and more used to digital devices. That's how the world is right now and where it is going. I feel that with Worlds we are really getting into a place where we have a great experience for kids in the digital world. This is a way for them to get introduced to LEGO digitally first and then they can get inspired in the physical world.

**HBM:** What departments are involved in designing the game?

**KVN:** Right now digital games and apps - the department I work for - is running with the game. I have a testing team who are the creative leads and I am the marketing lead and we are working very closely with One-off and TT-games on developing the game. We are of course talking to a lot of other departments within LEGO to get this game right. We talk to the different product groups

to make sure that the minifigures are doing the right thing, and that the animation is great – it has the right LEGO® DNA. If we add a model to the game we talk to the different design teams. We actually have the Creator house in here, so we talked to the Creator designer to see that everything is right: the animation, the way the vehicle works, the characters and so on. We work a lot with the product groups as well. It is very important to keep the DNA and the tone of voice the same as in the physical part.

**HBM:** Do all the constructions in the game that people can build use only existing parts?

**KVN:** No, we have a specific palette of bricks. We have been very blessed that we have a very engaged community, so actually one of the community members created a palette for the lead designer, so that everything you build in LDD using that palette you can actually import into the game.



**HBM:** Do those constructions need to be buildable in the physical world?

**KVN:** Yes, actually one of the things we did a couple of months ago was a contest on ReBrick. The winners of that contest will get their model included in the game, but Nathan (Sawaya) is also building them in the physical world and they were displaying them at The Art of the Brick.

**HBM:** Can you use illegal building techniques?

**KVN:** Yes, because you can build in the sky and you can't do that in the real world! But we are using the LEGO palette of bricks. You could say we cheat a little, but I prefer to say we allow for even more builds. We have quite a large palette, but we are still adding more doors, windows, etc. to the game as well. We also have all the different LEGO colours, so again it is very true to the physical way of building and playing with LEGO, but it is in the digital world and there are a lot of elements in LEGO so we can't have all of them in the game.

**HBM:** Do you think that children still prefer physical play over digital play?

**KVN:** I can't say what children prefer. Children are very different. Some prefer physical building, others prefer digital building. The physical brick will never die - everything we do is centred around the physical brick. That's also why the game has the brick as the centre of play and why there is building in the game. I hope kids will enjoy this experience as much as they enjoy building in the physical world. But kids are different and they have differing needs. Time is different - in the game I can build a castle in just one minute and in the real world it would take more time, but there is still the satisfaction, and it shows I can do stuff and be creative, which is something we really enjoy seeing. I enjoy building digitally, when I am in a specific state in my way of playing, and I love playing physically - I have those moments when I'm opening up a new model, seeing all the functions and features. They are two very different experiences, but I love them both and I hope kids see it the same way.

#



**Kari Vinther Nielsen**  
*Marketing Manager of Digital Games*

# Interview with Chris McVeigh

By HispaBrick Magazine®

Pictures by Chris McVeigh

At the start of September we published a review of the The LEGO® Christmas Ornaments Book, a hardcover edition with instructions for 15 festive decorations. [1] For this edition of HispaBrick Magazine we talked to the designer and photographer of the models to learn a little more about his passion for the LEGO brick.

**HispaBrick Magazine:** The instructions in the book are already available on your website. What motivated you to prepare a physical book with these builds?

**Chris McVeigh:** No Starch Press had been pursuing me for a while to do a book, and earlier this year, I decided that it was time! It's been presented as kind of a best-of collection, with a few unique items thrown in there (like the Computer Ornament and the Camera Ornament).

**HBM:** In addition to festive ornaments, you offer a range of other builds on your website. Do you have a favourite theme or set of building criteria?

**CM:** Overall, I think I prefer retro-tech builds like the radio, televisions and computers. Electronics today are flat and boring, but back in the '80s, the limitations of technology encouraged a lot of interesting shapes and aesthetics.



**HBM:** All of the builds you offer on your website are relatively small in scale. Do you also build larger projects?

**CM:** In general, no. Most of what I build is designed for public consumption, and very few people are going to go out and spend \$300 on Bricklink to build a larger model. So, I try to keep my designs bite-sized so that more people can enjoy them. (If I could design anything I wanted, it would almost certainly be modular buildings!)

**HBM:** Is LEGO® “just” a hobby, or has it also become a way to earn a living?

**CM:** At this point, it's become my livelihood. And I still can't really believe it!

**HBM:** Another important area of your website features your LEGO Photography. What is your inspiration when you create these photographs?

**CM:** Under pressure from a friend, I joined Flickr in 2007. I quickly fell in love with photography (something I'd previously felt was far out of my comfort zone) and soon purchased a DSLR. I also discovered that I enjoyed creating comical photos featuring action figures. At first it was Hasbro Star Wars figures, but as time wore on, I became frustrated that I had to build props and sets for most photographs. So I started to shoot more LEGO Minifigures, because I could literally build any scene I needed out of LEGO.



**HBM:** Can you tell us a little bit about the process of creating those photographs?

**CM:** I don't know that there's a specific process. Usually I let an idea gestate for a few days until I am confident in the concept. Then I'll get to work, building a set out of LEGO (if necessary). I love using natural light, but recently I've switched to flash for many photographs due to the unpredictability of the weather. (I'm so busy, I no longer have time to wait for a nice day!)



**HBM:** The third creative leg of your website shows your Brick Sketches. What got you started on that project and what kind of characters do you enjoy building most?

**CM:** A few years ago, my artist friends Karen Hallion and Crystal Bam Fontan started doing marker sketches and posting them to social media. I thought they were great, but realized I could never match their artistic skills. So one day as a joke I made up a crude Wolverine 'sketch' out of LEGO and posted it to Instagram. People loved it, so I decided to do more. By the third sketch, I'd locked down a few basics: always front profile on a 12x16 canvas. And it just kind of took off from there!

**HBM:** Have you posted all of them on your Flickr? I seem to remember a few custom portraits of LEGO reps...

**CM:** A few Brick Sketches are not on Flickr, including the original Wolverine, which can only be seen on Instagram. And yes, I did Brick Sketches for the LEGO AFOL Relations team, which can be seen on Kevin Hinkle's social media channels. :) #



Visit Chris McVeigh's website [chrismcveigh.com](http://chrismcveigh.com) and Flickr account [www.flickr.com/photos/powerpig/](http://www.flickr.com/photos/powerpig/) to learn more about his work and follow him on Facebook ([@c.mcveigh.photos](https://www.facebook.com/c.mcveigh.photos)) and twitter (@[@ActionFigure](https://twitter.com/ActionFigure)).

[1] You can find the review on ur blog



## Steampunk

By HispaBrick Magazine®

Steampunk is a literary sub-genre of science fiction or fantasy and the technology that emerged in the 80s, from the hands of writers who were well-known for their cyberpunk work, and which incorporates aesthetic designs inspired on industrial steam engines from the 19th century.

Steampunk work often focuses on an alternative history in the Victorian era in Britain in the 19th century or the American "Far West", in a post-apocalyptic future that still uses steam as its main source of power, or a fantasy world that uses steam power. Steampunk can therefore be described as neo victorian.

Steampunk takes its inspiration mainly from the work of H. G. Wells and Jules Verne and the imagination contained in their work, or from modern authors Philip Pullman, Scott Westerfeld, Stephen Hunt and China Miéville.

Today, this sub-genre has matured and become an artistic and socio cultural movement, and not only in literary circles. Of course AFOLs from all over the world have created Steampunk LEGO® constructions. In this selection of TopMoc those of you who are not familiar with this theme can see some interesting and creative examples.

#

### THE RUNAWAY INVENTION



<https://www.flickr.com/photos/burningblocks/>

## STEAMPUNK

Yohhei Yamamoto  
#Meko#  
Japan



<http://plusl.jp.net/>

## FARRISWORTH EXPLORATION CO. LTD

Jars Darstad  
//Lego Fjotten//  
Norway, 2016



<https://www.flickr.com/photos/100114564@N06/>

## URBAN STEAM MONORAIL



Oylvain Amacher

#captainsmog#

Switzerland, 2011

<https://www.flickr.com/photos/captainsmog/albums/72157623908933430>

## STEAMPUNK SLAVE I

Andreas Jenander

#adde5l#

Sweden, 2016



<https://www.flickr.com/photos/124068149@N02/>

## TORTOISE-CLASS



<https://www.flickr.com/photos/25681217@N04/>

## PARIS 1889



<https://www.flickr.com/photos/76884750@N03/sets/72157667097663061>

# THE VAMPIRE HIDEOUT

Lionel Martin  
#Castor Troy#  
France, 2015



# RLUGs of the World: ZBUDUJMY.TO

By HispaBrick Magazine®

Pictures by ZBUDUJMY.TO



**HispaBrick Magazine:** Name of the RLUG?

**Zbudujmy.to** (which means: Let's build it)

**HBM:** Country?

**Z.t:** Poland

**HBM:** When did your RLUG get started?

**Z.t:** We started about four years ago, and we are currently working on our 4th anniversary event. A lot has happened during those years, and we have put a lot of bricks together.

**HBM:** How did it get started?

**Z.t:** Most of our members used to be in LUGPol and were pretty active there. We had different views on how a LUG should be run than the LUGPol owners, and because we were not able to make changes there to satisfy us, we let go of LUGPol and created [Zbudujmy.to](http://Zbudujmy.to). Now we run things our own way, though not without some mistakes. Not everything is just roses, but we have had some successes—let's talk about those later.



**HBM:** How many members does it have?

**Z.t:** We oscillate around 50 associated members, paying a yearly fee and having full access to benefits and responsibilities, and then we have over 600 forum members on top of that.

**HBM:** Are there any other LUGs in your country? Do you have contact with them?

**Z.t:** As mentioned before, other than [Zbudujmy.to](http://Zbudujmy.to) in Poland there is also LUGPol. There used to be KMFL (Klub Młodych Fanów LEGO® - Club of Young Lego Fans), which was not recognized by LEGO in terms of the LEGO Ambassador Network (LAN), but it seems they have all already matured and either grown out of playing with bricks, or have joined one of the other Polish LUGs.

There are some members that have dual membership, so there is some communication and cooperation, but there are also some members on both sides who still feel the grudge. We try to cooperate as much as possible when working with LEGO Poland but that still generates some tensions. I hope this will ease out with time, but that's not happening just yet.

There is also [Sariel.pl](#) (Pawel Kmiec)—a recognized online community.

**HBM:** Do you organize events or exhibitions?

**Z.t:** Of course we do. We used to organize many events in cooperation with local museums which would last for about 2 months. These usually consisted of an opening weekend when people could meet with us, play with interactive models, and have fun with bricks; and then for the rest of the event there was just an exhibition. Usually there were well over 10,000 visitors.

Recently we are moving a bit into the format that TLG prefers, which is weekend events. Those are usually smaller, but also easier to run and organize.

We also attend occasionally to some other events like Fan Weekend or LEGOWorld; maybe not as often as I would like, but some of us want to connect more with AFOLs around the world.

**HBM:** Do you have contact with TLG (The LEGO® Group)?

**Z.t:** As with every registered LUG, we have contact with TLG through the LAN, where we are vocal and have had some contribution since it was created in its current form.

We also have good contact with LEGO Poland. It is a perfect example of what cooperation with TLG and RLUGs could look like. They are very supportive, they help us organize events, and lend us play-tables and huge built figures to make our events more interesting for kids. In exchange we take part in different projects together. This year we have been building some Polish landmarks, so they can exhibit them during their shows.



We also prepared a big 3D map of Poland which was built by the public during an event accompanying the opening of the first Polish LEGO® Store (licensed, not LBR). We also built some landmarks to be placed on the map among kids' built models.



**HBM:** How easy is it to be a LEGO fan in your country? Do you have any advantages or difficulties?

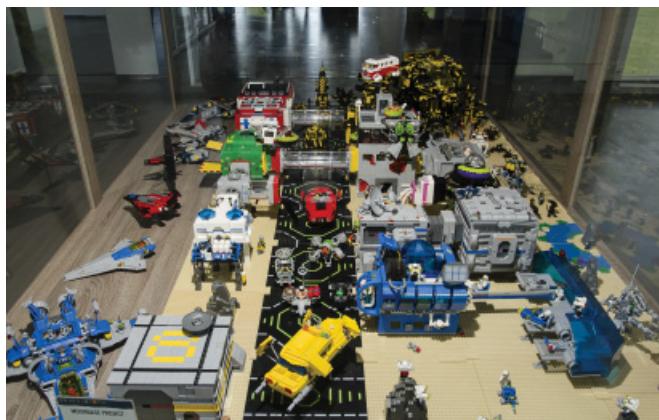
**Z.t:** It is not easy, as average salaries are lower than in the west, and the bricks cost us the same or even more. It is not as bad as in some other countries of the ex eastern block, and the gap between us and the west is slowly closing.

We often were complaining about not having an official LEGO Store, but this year we got one in our capital, Warsaw. That is a licensed shop, so VIP cards are not available, but at least we have our own Pick a Brick wall. That of course is still far from having it in most bigger cities, but at least we cannot complain about it anymore.

Being an AFOL used to be perceived as something strange, but that's changing slowly.

Our biggest assets and advantages are our great and extremely creative builders: Jarek Książczyk (Jerac—Chimera, WH40K), Michał Kaźmierczak (Migalart—Erebor, Mustafar), Paweł Michalak (KrisKelvin—Western City modular, castles), the extremely productive Bartłomiej Huetter (BHs), and Paweł Ostromecki (Zgredek—DiscWorld MOCs and minifigs) just to name a few. Paweł Kmiec (Sariel) is also a forum member but is not associated. Many of us have grown up under communism, where there was a lack of everything, and that has made us skillful in making up for what we lack and doing things with what we have.

We also have some dedicated collectors, like Waldek Jeziorski (Amal), who not only has all the Classic Space sets, but also all the alternative versions built.



**HBM:** Do you have any interesting anecdotes related to your LUG?

**Z.t:** Yes, here are some:

- Our name [Zbudujmy.to](http://Zbudujmy.to) is also our website address. It took some effort to get the .to domain, but it also creates a lot of confusion. People often type zbudujmy.to.pl or zbudujmyto.pl and cannot find us. But unfortunately we cannot secure those domains.
- Once a Ban Bao sales representative contacted us and wanted to advertise here...
- Probably because many people used to be in LUGPol, we are sometimes confused with them. It is sometimes annoying, and sometimes funny, for example when we get contacted by mistake about a secret project of the other RLUG.

- There is a Polish-language blog by one of our ex members: <https://8studz.wordpress.com/>
- One of our members also has a blog in English: [crazybricks.com](http://crazybricks.com)
- When we were preparing an exhibition in Chorzów last year, the lights went out, and we had to assemble MOCs using our smartphones as flashlights.
- Sometimes when we exhibit at the other end of Poland, not everybody comes in person and some people just send their models. Fragile models can break apart during transport and we try to rebuild them as best as we can, but without the original builder at hand what we produce can sometimes be quite different from the original MOC :)
- We were invited to exhibit at the newly opening "I love Baltic" museum in 2014. So the museum was still being built while we were preparing the exhibition. We had our version ready and built before the actual museum was completed.

#



ZBUDUJMY TO



# LEGO CITY 2016

By lluisgib

Pictures by lluisgib and LEGO® System A/S

LEGO CITY started in 2005 as a "new life" for a theme that was almost dead. After the success of LEGO® Town in the 80s and early 90s, the theme turned towards juniorisation, and it almost disappeared. After that, there came the first attempt to resurrect the theme with "World City" sets. I can't say that I didn't like those sets, but I still see them as somewhat juniorised. The theme only existed for 2 years, and in my opinion the train sets were the best sets during this transition.

CITY started with firefighters, policemen and construction workers - the most repeated sub-themes ever. I can perfectly understand the reason for this choice. It is what kids repeatedly ask for. The second year added some of the other classical sub-themes, like a hospital and an airport. Once LEGO had the 'infrastructure' of the CITY down, new sub-themes started to appear more frequently, together with new versions of the first and most successful themes. The sub-themes have been very useful in making a complete city where people can live, go shopping, travel, etc. One of the shortcomings I saw at the beginning, however, was the lack of houses to live in. Interestingly, CREATOR covered this shortcoming, together with the only CITY House, in 2010.

Sub-themes include:

- Arctic
- Coast-guard
- Cargo
- Farm
- Mining
- Spaceport
- Volcano explorers

Some of those sub-themes have also had their own evolution and some sets have been renewed while others are unique in their theme.

The last few years have shown that January is the month in which the "classic city" sets appear, sets like Police and Firefighters, and also a sub-theme we could name as "vehicles". These include trucks, cars, vans, sport cars, etc. In June there is typically a mixture of other renewed themes like airport, and new ones like Volcano Explorers, Mining or Arctic. June has been also the month of the "surprise" CITY set. Normally it is a set that complements City with models that don't appear in regular sub-themes. This year we have 65 CITY sets in the catalog. That's simply amazing. CITY turned from a residual theme to a core theme. I am very pleased to be able to open the catalog and see pages and pages of the most celebrated theme ever.

## January 2016

Last January we had perhaps the biggest launch of CITY sets ever. We saw 8 new firefighters sets, including a station,

a helicopter, a boat and several vehicles, 6 new Police sets including a Prison Island, a boat and 7 new vehicles, with a Ferry as the most surprising one.

The **60110 - Fire Station** is a new version of the well known



fire station, and it includes the building, a Helicopter, a Fire truck and a Fire car. What is new in this set is the appearance of a small model to be extinguished - a hot dog stand. The set is modular allowing you to build up to 9 different configurations. IMHO this set is dispensable for the CITY collectors, but it's a nice set for a kid that is starting to get into the CITY theme.

Perhaps more interesting is the new **60130 - Prison Island**. It



certainly isn't your normal police station given that it's located on an island, like Alcatraz, and the play features are also new and interesting. Besides the building, it includes a police helicopter, a police boat, a small boat and a hot air balloon the prisoners can escape with. There are different escape ways like a tunnel and the possibility to break walls. It gives great value and playability for its price, and I am very happy to see new, fresh ideas in sub-themes that fans usually consider boring.

But despite seeing more police and firefighters, I put all my hopes every January on the new sets from the "vehicle" sub-theme. This year the 7 sets launched in January are all amazing. I don't really see any set in the catalog that can be called a "filler", as each set complements the core sets well.



**60113 - Rally Car** is a 6-wide car inspired by the Pikes Peak rally cars and it looks very aggressive. It has a new part - a round tile 1x1 printed with "LIGHT" pattern. It has new sponsors like Expedite (an energy drink?) and Air Borne, which seems to be an airshow club. Octan is also present. It's easy to modify the car with the same parts of the set and get a new car to complete your race.



**60115 - 4x4 Off Roader** is another racing car, in this case inspired by the Dakar race. This set contains the car itself, 2 minifigures (male and female) and a tool stand. The car looks quite similar to the Desert Rally Cars: 4x4 model with huge wheels, the spare wheel in the boot, the reinforcement structure... The car has the Octan livery.



**60118 - Garbage Truck** is a new and fresh design of this service vehicle. The 2 prior versions (we could count 3 if we include the model from The LEGO® Movie) were designed for rear loading of the garbage. In this case the truck loads the container from the front. This means that both the truck and the container have a completely new design. The colour scheme of the truck is white-orange. The set includes 2 minifigures and some interesting garbage like fish, a bottle and a banana.



**60119 - Ferry** was the most surprising set when I saw the catalog. We have never had a Ferry in the LEGO CITY range. I think that the design of this Ferry can be recognized around the world. The Ferry can be accessed from both sides and it can transport 2 cars, although the set includes only one car (I suppose this is because of the price target of the set). The two minifigures included are also nice. These include the captain, new for this set, and a woman driving the car, with a smartphone as an accessory. The set also includes a new colour for the tile 8x16: bright green.

## June 2016

At the Nürnberg (DE) Toy Fair, in January 2016, the June CITY sets are shown together with the January ones in the CITY corner of the booth. When it comes to the CITY theme, one set gets people more excited than ever. There is no press release, no special presentation even. Perhaps this "normality" is what attracts more journalists. In June LEGO will launch a set with a disabled citizen in a wheelchair, and also a baby. Journalists only payed attention to the wheelchair, but LEGO fans also celebrated the new baby, as it expands the possibilities for our displays.

Besides this wonderful set, June came with new Airport sets, a new sub-theme - Volcano Explorers - and a new Gas Station.

**60102 - Airport VIP service** is the second version of this



set, although the first one (3222 - Helicopter and Limousine) included a helicopter instead of a Jet. The set includes a VIP jet with a serious black and white colour scheme compared to the airlines of the airport (blue - orange - white). The Jet is a smaller version of 2010's Passenger Plane (3181) with some slight changes like the engines and the wings. The limo is also a renewed version of the previous one.

Both the jet and the limo have a different interior compared to the prior sets. They have VIP services inside and reduce the space for minifigures in order to include more stuff, like bar

service, TVs, computers and a refrigerator.

There is another novelty in this set - a support vehicle with a

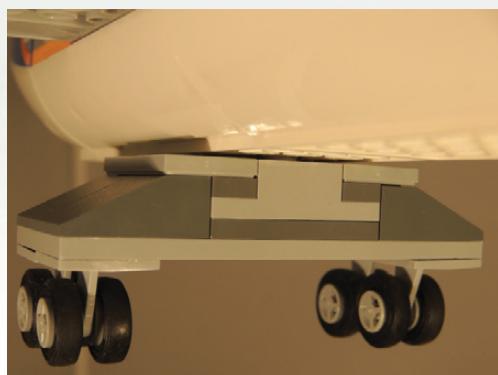


ground crew. The vehicle has a "Follow Me" sign.

**60104 - Airport Terminal Service** is a little disappointing.

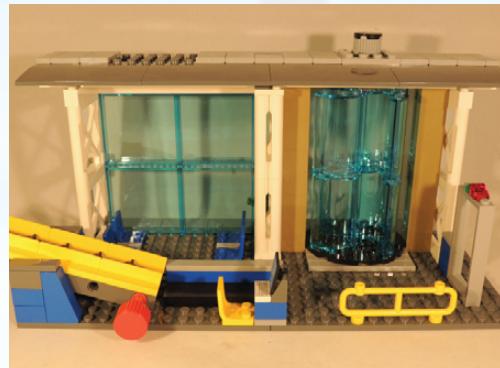


The airplane included has a new livery in blue and white, with orange lines, but it is almost identical compared to the prior ones. I have to admit that there is an improvement inside the cabin, where we can find a toilet, a kitchen for the cabin crew and the seat in an opposing direction where the cabin crew sit for take off and landing. The landing gear is something that LEGO has no perfect solution for. The front one is fine, but the rear gear assembly is connected to the airplane with technic pins and it doesn't perfectly fit on the plane, so the plane swings during taxi operations.



The terminal is... empty! The building looks quite nice, but there is almost nothing inside. There is one revolving door and one big glass wall. From the exterior, the terminal looks modern. On the inside, there is one check-in desk, a waiting room, seats and a security door. No bar, no lockers. In my opinion the interior is poor. The luggage belt is oversized

compared to the rest of the terminal, and although it works, it is the only element you can see when looking at the terminal. Above it, there is the control tower. Nothing new here. It is integrated in the building and has one controller, one seat and one radar. What is strange is that looking at the whole terminal, the control tower is looking out toward the front of the airport, not toward the runway. Of course you can turn it, but it has no meaning.



There is also a support vehicle that carries a luggage trailer, a small fuel tanker and a mobile stairway. The design of the vehicle is compact and fits very well in the model. This is the nicest submodel of the set and, together with the other sets of the year, you have a complete support vehicle set.



**60103 - Airport Air Show** has been the nice surprise of the Airport sub-theme. There is only one prior reference of this set, back in the 90s (6345 - Aerial Acrobats). In this case, there is one old plane (a throwback to the old set), two new Airshow Jets, a service vehicle and a hangar.



The old airplane is a compact acrobatic biplane - the kind of airplane that can write a message in the sky with smoke. The design is very classical, although the colour pattern, in orange and black, looks quite modern. The cabin is closed with a dome and there is a fence over the top wing to place a minifig to do exciting acrobatics.

I really appreciate the effort of the designers on the two jets. Instead of modifying last year's training jet (**60079 - Training Jet Transporter**), they have designed two brand new aerobatic jets, and both jets are completely different.



One of them has the wings at the center of the body, and it has two jet engines and two small tail fins. The jet is red, black and white. It is very interesting to see how the designers have drawn black lines using wedge plates. The tail fins are at around 30° from the vertical line.



The other jet has the wings at the rear of the body and it has one jet engine and one big tail. It has the same colour scheme, although it could have had different colours to give more variety to the set. The cockpit is the same as in the other jet. Just behind the cockpit there are two small stabilizing wings, just in front of the main wings.



The other star of the set is the hangar. It is something completely new in the CITY range. It's an open building, based on a structure built with a mixture of system and technic parts, and covered with plates. The Hangar doesn't have any services or furniture inside. You have plenty of room to put any of the three planes inside of it, add the mechanic with the tool trolley, and repair it. There is also a support vehicle with a fuel pump to refuel the planes.



The set comes with 6 minifigures and they look great: 2 pilots for the jet planes, one male and one female, a pilot and an acrobat for the old plane, one mechanic and one ground crew member. There are two new torsos, one belonging to the jet pilots, and another one belonging to the figures of the old plane. The design and quality of the printing is, as always, impressive.

It is a very good set, the best one in the 2016 Airport sub-theme and with the addition of older sets like **60019 - Stunt plane**, or some of the older Airline exclusive sets, you can reproduce a complete and exciting air show.



One of the surprises of the year was the set **60132 - Service Station**. It has been a long wait since 2007 when the set 7993 - Service Station was released. It was the last service station launched and we have had to wait almost a decade to get a new one. The good thing is that the new version is a completely new design. Nothing from the prior one has been reused.



The gas station has a modern look, and it has services adapted to current automotive technologies. It has two gas pumps. Each pump has different buttons to select fuel or diesel. Nothing new here. But on one side of the gas station building, there is a charging point for electrical cars. The car included with the gas station can be connected to the charging point. Then you can choose whether your car uses fuel or electrical power. Smart! The building has a cashier inside, together with a small restaurant and a LEGO corner, where you can find LEGO sets. Moreover, a board outside the gas station advertises LEGO products and "The LEGO News" newspaper.



The Service Station, for the first time, is not placed on a baseplate. We have seen over the last years that baseplates have disappeared from the LEGO CITY sets. Kim E. Thomsen, from the LCE Team, explained that baseplates are produced by a 3rd party and LEGO prefers to put the models on plates, which are produced by LEGO. I'd prefer a baseplate instead of the current method personally.

Together with the gas station, there are three vehicles and the gas station sign. The car, mentioned before, is a maroon, 4 stud wide, two-seater. It looks like a sports car and it is driven by a woman. There is also a 4WD blue tow truck, 4 studs wide. It is slightly different compared to other tow trucks, but has nothing special to highlight. I can't say the same about the street sweeper. It is a new design, a 2-part body vehicle in yellow. The front part has the cockpit and the sweeper. The rear part, joined to the front one, has the tank for the water and a porter to store the tools. A bicycle is also included in the set.



I think that this is a new and fresh design of the Service Station with lots of playability. It has nicely related to our hobby by including the small LEGO corner and even appealed to sustainability with the charging point.

The Volcano sub-theme is the newest to appear in the CITY range. It includes 6 sets, from a starter set to an Exploration Base. This sub-theme is similar to 2014's Arctic sub-theme, and there are some ideas reused. The colour scheme is lime-gray based.



The **60123 - Volcano Supply Helicopter** is a mid-size set. It includes 3 minifigures, one helicopter and one excavator. The helicopter is similar to prior firefighters or Coast Guard helicopters but this doesn't mean that it is a bad design.



The helicopter is quite big and robust. It has the pilot's cabin, a winch, and a rear cabin. It can carry the lava boulders using a hook. It is possible also to put a load in the rear, where there is a ramp that you can unfold.

The excavator has two treads that allow it to move through the mountain and the lava. It includes the cabin, one articulated arm and one hook to pick up the lava boulders. There is also a small boulder rack where you can put the lava boulders and break them to extract the crystal elements.



There are 3 minifigures in the set: a helicopter pilot, a female volcano explorer and a worker. The minifigures are done in olive green and they have new decoration, with lots of tools and safety elements.

The set is not very difficult to build; there are no complicated building techniques. Once the set is built though, it looks very nice, with lots of playability. Perhaps it's a set more for kids to play with than for adult displays, just like the rest of the Volcano sub-theme.



I left the CITY set that generated the most noise for last. As I mentioned at the beginning, the set **60134 - Fun in the Park - City People Pack** was quite popular in the media. Internet sites and newspapers from all over the world were excited about the first LEGO wheelchair... MISTAKE! There have been some brick built wheelchairs in LEGO before, but let's say that it is the first specific LEGO part for a wheelchair.

The set is a compendium of 3 subsets, including 15 minifigures (10 adults, 4 kids and one baby).

The first subset includes 5 minifigures (hot dog seller, businesswoman, two adults and one kid), a hot dog stand with the new hot dog bread, a tiny merry-go-round, a bus stop sign, a bicycle and a tree. In this first subset there is the wheelchair. It includes two new parts, the chair and the big wheels. The minifigure fits perfectly in the wheelchair and it can also be pushed by another minifigure.

The second subset includes 5 minifigures (Grandpa, Grandma, two kids and a park maintenance employee), a bench, a football goal and a fence. There isn't really anything remarkable in this second subset.

A new citizen appears in the last subset: a baby. There was a lot of noise about the wheelchair, but for me the baby has the same level of importance. The baby is a 2 piece minifigure - a body and a head. The baby is placed in a brick-built stroller. There are also 4 more minifigs (father, mother, kid and a gardener). In this subset there is also a picnic table, a dog, a lawn mower, a tree and some food.

The set is a collection of minifigures and some accessories. It is interesting mainly because of the wheelchair and the baby.

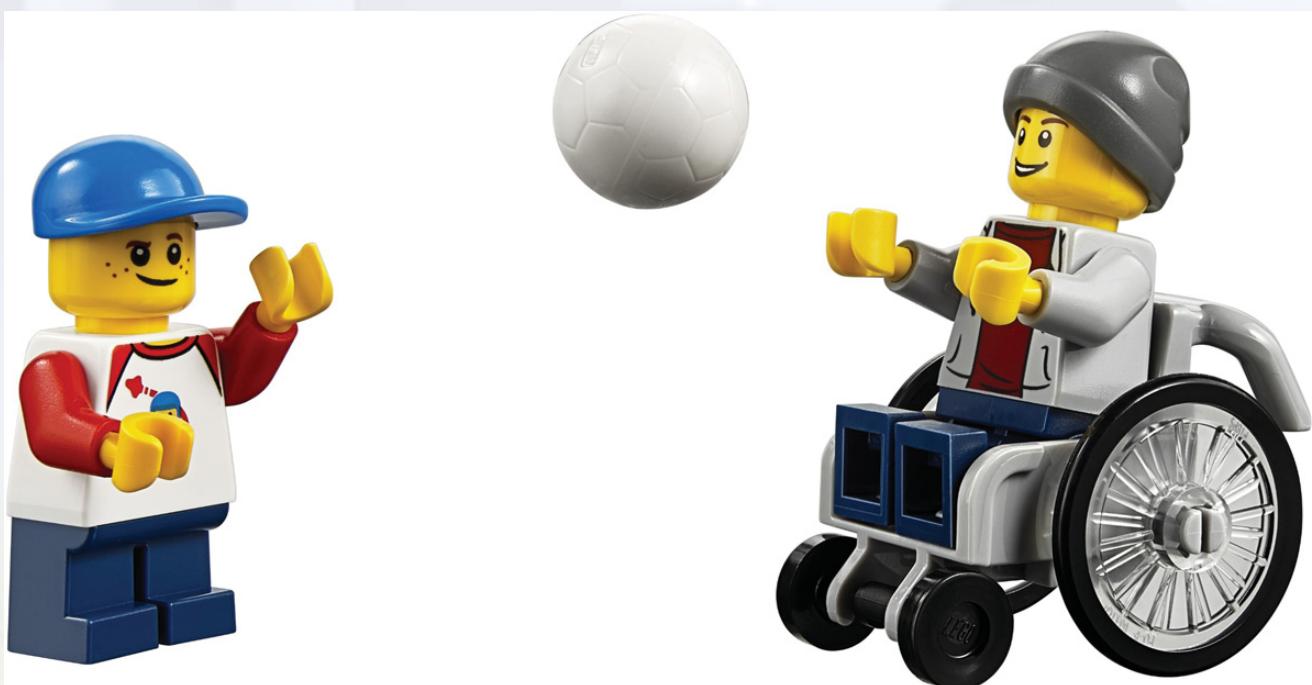
although the baby is also available in another colour in the CMF16. The set is expensive for what you get. 15 minifigures and a handful of accessories. I understand that there are some new moulds, but I think that the addition of the baby and the wheelchair has inflated the price, which I think could be 30€ instead of 40€. Anyway it is a very nice set that includes great complements for our cities.

## Conclusion

2016 has been a good year for the CITY fans. Renewed sets, new sets, new sub-themes, new moulds... This year you can build a complete city, police, firefighters, airport, gas station, leisure... Looking at the catalog, which combines this year's with last year's sets, we are in one of the best CITY years ever. After some years of lackluster designs, we have an explosion of new sets and new ideas. I am very happy to say that CITY is now returning to the best years of TOWN, with variety and good designs. CREATOR is the perfect complement for houses and some shops. I expect to have more surprises next year. But we will have to wait a little bit more until we will be able to see the new January sets on the net.

I would like to thank LEGO for providing some of the sets for review. The opinions expressed in this review are of course entirely my own.

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# Various chassis types: Four wheels and six basic combinations

By Oton Ribic

Pictures by Oton Ribic

If you are familiar with LEGO® cars, especially those built using Technic, you are well aware that the large majority of them share the same chassis configuration, with the front wheels steering, and the drive - if existent - at the rear. This is, of course, no coincidence: this particular configuration is used by many cars in the real world.

However, while it is useful and generally does the job, it is but one of many possible configurations that may be used. Here we will take a look at a few of the most common types. There is no universal recipe for choosing the right one because it usually depends on balancing the pros and cons for a given situation.

So let us begin by dissecting the aforementioned most common front steering, rear drive configuration. It is rather simple and reliable while providing pretty good turning radius and performance, which made it popular on all sorts of vehicles. However, in the LEGO world it has its drawbacks; of the two motors aboard, only one is used for drive, and the other's power is rarely ever employed.



The rear drive and front steering configuration is the most common and can be built very simply and quickly, using just a couple of parts.



Differential drive, such as this official 8547 robot, allows turning in place, but steers roughly and with lots of skidding.

This is where the differential drive, also known as the tank drive, comes into play. If two motors are used, one connected to the left wheels and the other to the right, all power onboard (i.e. from both motors) is used when the vehicle drives forward or backward. Just like with tanks, this type of chassis steers by letting the motors, and hence left and right wheels, turn at different speeds. An additional advantage this brings is reducing the turning circle down to zero: in fact, if the wheels turn at equal speeds but opposite directions left and right, the vehicle turns in place. These advantages come at the cost, however, of immense skidding and rough steering, whether wheels or tracks are used. The motors have to overcome plenty of friction while turning, to say nothing of the strain exerted on the chassis. Still, for heavy-duty vehicles where mechanical strength is of no concern, it may be very useful.

An interesting alternative is a self-steered chassis with differential drive. If the rear wheels are driven by a separate motor each, it is easy to let the front wheels turn as they like under the steering, if any, exerted by the rear wheels. Two approaches are viable in that case. In the first one, the front wheels may just have lots of caster, i.e. be mounted behind their hub's turning point, similar to e.g. a shopping trolley's wheels that turn readily in whichever direction they are pushed. This is a very simple yet reasonably reliable solution.

A more complex approach uses a mechanism that 'measures' the speed difference between the rear wheels using a differential, and if it is present, mechanically steers the front wheels accordingly, such as the one shown in the photograph on the right. The common advantages of these chassis is again having all power focused on drive and fine handling on smooth surfaces.

However, maneuvering in tight spots or on difficult terrain, as well as turning the front wheels in place, is all the more difficult. Actually, as an extreme example, the front wheels can even be built without any turning ability at all. This straight-wheel differential drive turns even more roughly than its kin, especially on difficult surfaces. It may be said that it is more of a straight-line chassis with the option of correcting the course, than really a chassis with proper steering. But for special types of vehicles, such as high-speed dragsters, that is just what is needed - it uses all the power onboard and is very simple, therefore reliable, strong and light.

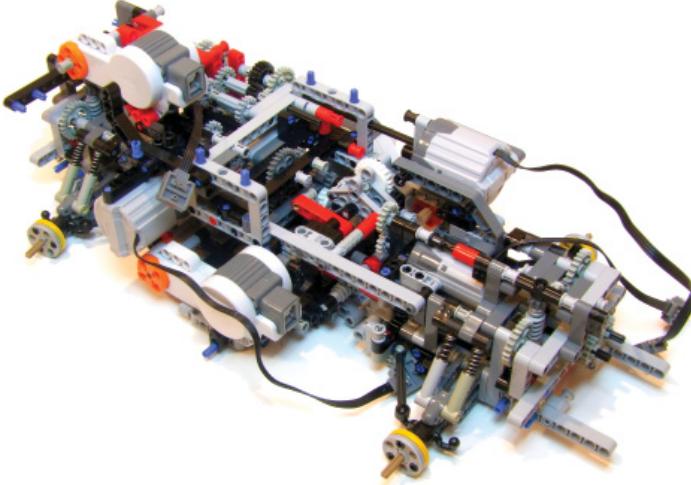


An example of a rear differential drive with self-steering mechanism which turns the front wheels according to the difference in rear wheels' speeds.



Four wheel drive with front wheel steering offers good performance at a cost of slightly complex chassis.

An even more advanced version is the 4 wheel drive, 4 wheel steering, or 4x4x4. This retains all the advantages of the 4x4 but allows for even tighter turning and agile handling in any situation. A good example is The LEGO Group's own 9398 Crawler. Its obvious drawback is the complexity, as each wheel needs to turn, drive and is probably suspended as well. Therefore it needs to be properly reinforced, making it large and heavy.



Driving and steering on all four wheels brings top-notch performance, but requires complex mechanics with plenty of reinforcements and testing.

Note that all these criteria apply regardless of whether the chassis drives forward or backward. I.e. rear wheel drive with front wheel steering brings similar pros and cons as the front wheel drive, rear wheel steering. At the speeds of LEGO vehicles, the advantages of rear-wheel acceleration is not that important.

There are, of course, many more chassis configurations, especially if more than four wheels come into the formula. But these are a good starting point because of either their performance or their simplicity. Just keep in mind that it always comes down to the game of balancing: there simply is no chassis, either in LEGO or in the realm of real world vehicles, that can be light, robust, simple, fast, agile on all surfaces and reliable at once.

#

Configuration	Differential 2 wheel drive without steering (wheels fixed straight)	Differential 4 wheel drive without steering (wheels fixed straight)	Differential 2 wheel drive with passive or active self-steering	Standard 2 wheel drive and 2 wheel steering	4 wheel drive and 2 wheel steering	4 wheel drive and 4 wheel steering
Description	One wheel on each side of the car is powered by a separately controlled motor. Steering is done by rotating them at different speeds, against the friction done by the remaining two fixed wheels.	Both wheels on each side of the car are powered by a separately controlled motor. Steering is done by rotating them at different speeds. None of them can turn.	One pair of wheels is powered by two separately controlled motors, while the other pair steers according to their motion - passively due to sideways force and caster, or through a mechanism for this purpose.	One pair of wheels (usually rear) provides drive with a motor, typically through a differential, while the other pair steers and is controlled by the other motor. Configuration very common in road cars.	All wheels are driven by a motor, usually each pair having own differential, and the third between the front and rear axles. One pair of wheels (typically front) steers. Common in many off-road cars.	All wheels are driven by a motor, usually each pair having own differential, and the third between the front and rear axles. All the wheels can steer as well.
Pros	<ul style="list-style-type: none"> <li>extremely simple to build</li> <li>* very robust</li> <li>* all power onboard focused on providing drive</li> </ul>	<ul style="list-style-type: none"> <li>* very simple to build</li> <li>* all power onboard focused on providing drive</li> <li>* good off-road capability in a straight line</li> <li>* can turn in place</li> </ul>	<ul style="list-style-type: none"> <li>* all power focused on providing drive</li> <li>* good handling and agility on smooth surface</li> <li>* passive version is simple to build</li> </ul>	<ul style="list-style-type: none"> <li>* good handling and manoeuvring on all sorts of surfaces</li> <li>* lots of existing reference designs (both within Lego and in general)</li> <li>* relatively simple</li> </ul>	<ul style="list-style-type: none"> <li>* excellent handling, suitable both for performance cars and off-road</li> <li>* even distribution of force ensures excellent grip and response</li> </ul>	<ul style="list-style-type: none"> <li>* best handling on all surfaces and for all applications</li> <li>* even distribution of force ensures excellent grip and response</li> <li>* small turning circle (perfect manoeuvrability in tight spaces)</li> </ul>
Cons	<ul style="list-style-type: none"> <li>* very unreliable and rough steering</li> <li>* huge turning circle</li> <li>* lots of tyre slip</li> </ul>	<ul style="list-style-type: none"> <li>* rather unreliable and rough steering</li> <li>* lots of tyre slip</li> </ul>	<ul style="list-style-type: none"> <li>* difficult to turn wheels while stationary</li> <li>* hard to control on off-road terrain</li> <li>* needs to be finely adjusted</li> </ul>	<ul style="list-style-type: none"> <li>* only one motor provides driving power</li> <li>* possible lock on slippery surfaces if using a standard differential</li> </ul>	<ul style="list-style-type: none"> <li>* only one motor provides driving power</li> <li>* very likely to lock without an LSD on slippery surfaces</li> </ul>	<ul style="list-style-type: none"> <li>* can become quite complex and tends to be fragile</li> <li>* only one motor provides driving power</li> <li>* very likely to lock without an LSD on slippery surfaces</li> </ul>



# Tutorials

## Modular Integrated Landscaping System (VII)

*Text and images by Legotron (A. Bellón)*

### Why aren't there any MILS rules for City or Train layouts?

This is, probably, the most frequent question. And it is also the easiest one to answer. When I started working on the rules for creating modules I didn't have any trains or City sets. As a matter of fact, when we started working on it as a group, no one thought of applying it to City or Trains, since our initial idea was to use it only in collaborative displays among members of HispaBrick Magazine®.

There are several people who have started working on them and they have created some very interesting proposals that are perfectly valid. And that is the idea, as it would be impossible for us to cover all the possibilities, especially those that include themes we don't build in. At the moment, we are trying to compile all the ideas and modules that people send us in a Flickr group so everyone can consult them:

<https://www.flickr.com/groups/2014993@N20/>

### What system do you use for storing and transporting modules?

That's a really hard question to answer as it depends on many factors. Evidently, the most logical thing is for each person to use the system that best fits their modules, containers and preferences. This is very different from one person to another.

In my case, I build all my modules in two sections of 16x32 because I didn't have any 32x32 baseplates when I started out, but lots of 16x32. The advantage of 16x32 sections is that they are easier to store. For storage I use cardboard boxes from IKEA (27x36x20cm) which are the perfect size for those modules. I place basic modules, which are perfectly flat, in the lower part and then add modules by type: rivers, roads, relief,



In this way the flat modules, which support more weight, aren't damaged. In addition, in the space that remains on one side of the box I can place a 16x32 section with a certain thickness, like a bridge or a section with rock.

For mountain and hill modules (sections of 16x32) I use a larger box, because of their weight. I stack the modules like a Tetrix game vertically. I prefer not to use smaller boxes that would only hold one or two sections, since that would force me to buy more and more boxes as I build more mountains or hill modules. After filling up the available space I add some cardboard and place more modules on top. This is a really heavy box, because these are the modules that contain most parts. The boxes I use for transport also serve to store the modules when they are not used in a display, so they are always ready to be taken to the next event.



I have also seen AFOLs carry modules in boxes that were prepared like a CD rack so each module is supported on rails. The problem with this solution is that it only works for flat modules, since modules with some height would take up too much space. In addition, the space the rails take up diminish the storage capacity, even though they are very practical for taking out a single module without having to empty the whole box.

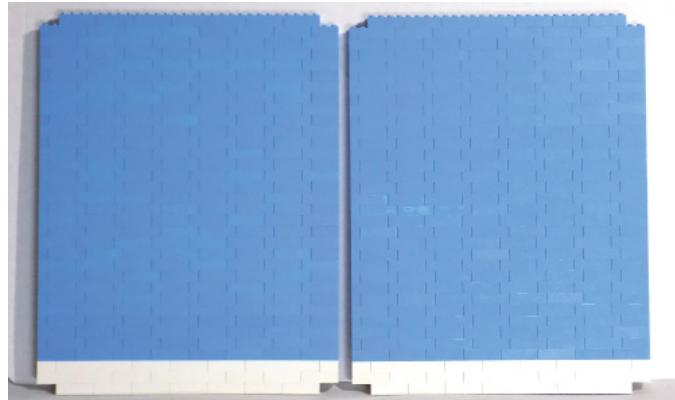
Anyway, I still think it is a system that is very personal; it's not the same if you need to transport 30 flat modules or 10 mountain modules and in each case your requirements are going to be different. It also depends a lot on how you build your modules, as 16x32 sections take up a different space as 32x32 modules.

etc.

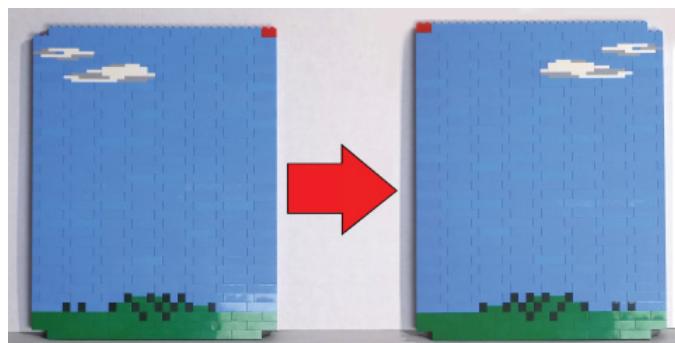
## Can you explain how the back panels work? Why do you say they are interchangeable and reversible?

The idea is really simple and is based on the same principle as the MILS modules: combining panels in such a way that, without modifying them, you can create different backgrounds by simply changing the position of the panels or turning them over.

As these modules are brick-built the mosaic you see on their front face also shows on the back. If the landscape is a simple horizontal line it doesn't matter how you place the panel; the result will always be the same.

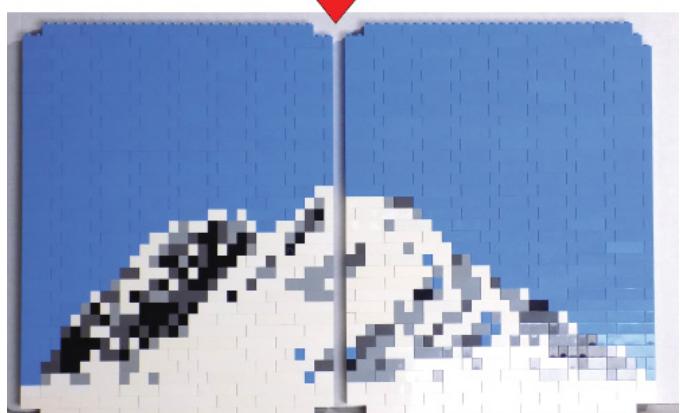
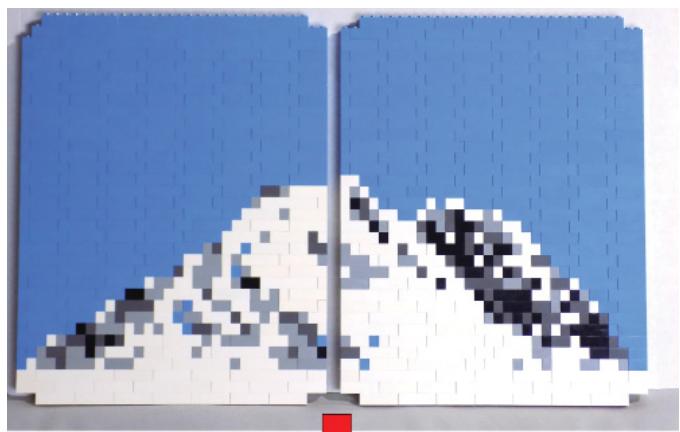


If the panel has some small details, like trees, rocks or small hills in the distance, when you turn the panel you will see how the position of the elements of the mosaic has changed, and so the landscape looks slightly different. The important thing is that horizontal lines on either side of the panel match to keep the landscape coherent.



But what happens if the landscape we draw in the mosaic contains horizons at different levels or that take up several panels? You only need to make sure that the panels that have elements with a different horizon match. And if that element takes up more than one panel, the mosaic only needs to have the default height for the horizon on the outsides of the group of panels. That way, if you turn over the whole group of panels you get a modification in your landscape.

In addition, the panels can be used on the sides of the layout, where the height of the horizon is less critical. This way you can make many combinations of panels, either changing their location or turning them over to create a different background for each layout.



Finally, these panels are still made up of bricks, so they can be changed easily, adding new details to the mosaic.

A simple trick is to print the mosaic design on paper, each panel on a separate sheet, with a normal print on one side and a mirror view print on the other. That way you can easily see the result even before you start building.

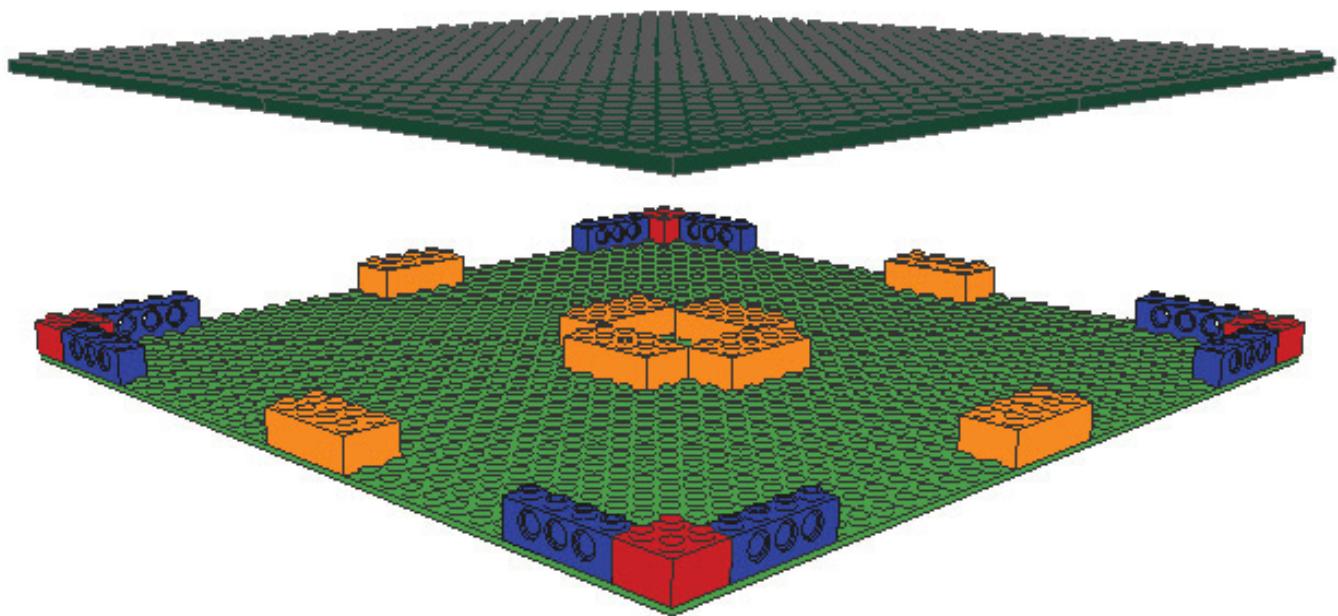
## How many parts do you need for a base module?

The simplest base module with minimal consistency could be made of the following layers (from the bottom up): a 32x32 baseplate, 4x Brick 2x2 for the corners, 8x Technic Brick 1x4 and 8x brick 2x4 plus 4 plates 16x16. That's 25 parts, but it may not be the cheapest combination as 16x16 plates are quite expensive. It isn't very sturdy either as there is a lot of space between connection points.

However, there are people who prefer to close the edges and use many more support pieces, because they use smaller plates to cover the same surface.

In my case, I use the biggest possible plates whenever possible as that makes for a firmer module, but I add many support pieces to avoid bending when I place a heavy construction on the module. I also like to close the edges to make the modules look nicer.

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## Conditional statements with LEGO® WeDo - Part 10

By Diego Gálvez

Pictures by Diego Gálvez

In this part I will explain in detail how to program a conditional statement using the tilt sensor in the LEGO® WeDo set.

A **Conditional Statement** is an instruction or a group of instructions that are executed or not, depending on the value of a condition. By default the WeDo software allows for one conditional statement.

Below I will show you how to implement the concept of **Conditional Statements** using the programming blocks in the WeDo software.

We will use two positions of the tilt sensor and assign a task to each one. To this end we first need to know what the current position of the sensor is. You can do this using a "Conditional Statement". This can be done using the following methods:

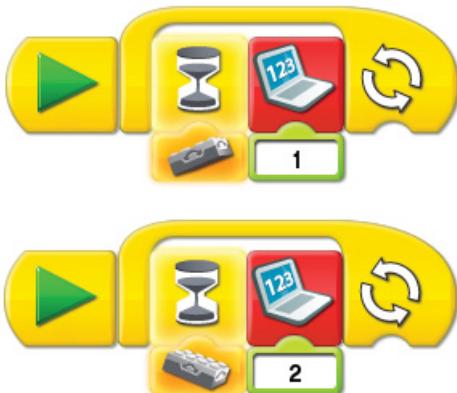
The **first method** consists in creating a conditional statement using several parallel programs that run simultaneously. For the following example I will use two simultaneous programs since there are two possible sensor states in the program:

- If the sensor is tilted up the program should show background 1 on the screen.
- If the sensor is tilted down the program should show background 2 on the screen.

Writing this program with the WeDo blocks results in two sub-programs:



To run them you need to click on the **Star block** (▶) of both sub-programs. When you do so, you will see this:



You can see both sub-programs are waiting for the tilt sensor to choose be in one of the programmed positions; so when you tilt the **sensor up** the program will show background 1 and when you tilt the **sensor down** it will show background 2.



## Second Method

Another way to create a “Conditional Statement” in the WeDO software is using the message blocks: **send message** block (✉) and **start on message** block (✉).

I will use the same example as in the first method.

There are two cases:

- If the sensor is tilted up the program should show background 1 on the screen.
- If the sensor is tilted down the program should show background 2 on the screen.

Writing this program with the WeDo blocks results in four sub-programs:



## First Case:

- Wait until the sensor is **tilted up**; when this happens send message “a”.



- When the sub-program with input “a” receives the corresponding message it will show background 1.



## Second Case:

- Wait until the sensor is **tilted down**; when this happens send message “b”.



- When the sub-program with input “b” receives the corresponding message it will show background 2.



To run them you need to click on the Start block (▶) of both sub-programs.

This is the last part of the tutorial explaining the use of the WeDo programming software. Future parts will show applications of the programming as well as some models with their corresponding programs.

On the website [notjustbricks.blogspot.com](http://notjustbricks.blogspot.com) you will find multimedia materials (images and videos) of the creations of the author, some of which come with building instructions.  
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# LEGO® WeDo (IX)

## Programming in Scratch

By Edward Romero

### Cover Image by Osvaldo Romero

The world domination plan is a lot of work, more like a full time job. This makes me realize that after all of this hard work we need a really long vacation. How about vacationos in our newly conquered territories? That would be a nice option. Before we vacation anywhere, we need to concentrate on the advanced instructions in Scratch to see if we can actually conquer a nearby place. The beach would be the ideal place to start this plan! If only we could create some robotic allies to scare away those curious minds that wander too close to our resting spot, it would be a dream come true!

Wouldn't it be nice to have the hungry alligator help us with this task? Or what about having the roaring lion help us as well, or even having the giant flapping bird to scare away those intruders that have not yet seen our biting robot's teeth!

In previous issues of this magazine we have made the comparison between the basic commands of the WeDo program and the equivalent coding instructions in Scratch. We have presented the Amazing Mechanisms (Dancing Birds, Smart Spinner and Drumming Monkey), the Wild Animals (Hungry Alligator, Roaring Lion and Flying Bird), Play Soccer (Goal Kicker, Goal Keeper and Cheerful Fans), and the Adventure Stories (Airplane Rescue, Giant Escape and Sailboat Storm). Let's continue with more advanced instructions for the next designs. Today, the Wild Animals return: Hungry Alligator, Roaring Lion and Flying Bird.



Let's start with the hungry alligator: this time it wants to bite, bite and bite.



The advanced version of the alligator in the WeDo program is presented below. Compared with the initial version presented in HispaBrick, it contains a loop that makes the program repeat forever, working together with the distance sensor. That is, anything that gets close enough will make our alligator start to salivate and be willing to bite without stopping.



Try to develop the Scratch code without looking at our implementation.

In Scratch, this code is not much different. Below is displayed one of the possible options. You need the "forever if" loop, the option that waits until the distance sensor detects motion nearby, the motor direction, the timing for the motor to open the jaws (0.5 seconds in the example), play an interesting sound (we used the Dog1 to confuse the enemy), change the motor direction to close the alligator jaws and a suitable time for it (0.7 seconds in the example).

```

when green flag clicked
forever if [distance sensor value < 30]
  [motor direction [that way v] v
  [motor on for [0.5 secs] v
  [play sound [Dog1 v
  [motor direction [that way v] v
  [motor on for [0.7 secs] v
end

```

The command to start when clicked and the “forever if” loop can be found under the Control menu. The commands for the motors can be found under the Motion menu. If the WeDo is connected to the computer you will see the options, otherwise you need to activate it under the Edit menu. You need to look under the Operators menu for the ‘less than’ command option (“`_ < _`”) before inserting the distance sensor in the “forever if” loop. Once this is done, you can place the distance sensor found under the Sensing menu. The sound option is found on the Sound tab. The sound was chosen from the Scratch library. You choose the sound using the Sounds tab next to the Script tab where you write your code. You can import the best sound you find or you can record your own terrifying audio. In the example, we have chosen the one called Dog1 under the Animal folder, so you will hear a fierce alligator!

We are going to make an even more advanced version of the Hungry Alligator in Scratch. In addition to opening and closing the jaws, we will use a virtual PC companion: the Sprites (we will finally use it!). The sprite will do the same action as our brick alligator but on the computer screen! You have seen the Scratch cat many times before; this is a sprite we can program to move with our bricks, cool isn’t it? The sprite for this programming task uses the shark costume. So, you will have control of the Roaring Lion and at the same time you can control a Hungry Shark on the computer.



Try to develop your code without looking at ours. The main difference with the first code is the use of costumes. This command is found under the Looks menu. You must import first the shark’s images for this task. They are found under the Costumes tab, next to the Scripts tab (where we do the programming). Two costumes were imported from the Animals folder (shark1-a and shark1-b). You can choose any costume, paint your own or use the Camera for the angriest face you have! We also changed the sound to be like a hungry shark under the sea. Since there are not many to choose from, we selected the Plunge sound from the Effects folder.

```

when green flag clicked
switch to costume [shark1-a v
forever if [distance sensor value < 30]
  [switch to costume [shark1-b v
  [motor direction [that way v
  [motor on for [0.5 secs] v
  [play sound [Plunge v
  [motor direction [that way v] v
  [motor on for [0.7 secs] v
  [switch to costume [shark1-a v
end

```

We will continue the programming with the Roaring Lion. We can do this using the tilt sensor on a robotic bone as in the WeDo software, or use the distance sensor to activate the roars. This version uses the distance sensor to awaken the sleeping lion. That way it can help us as a guardian to keep intruders away from our new territories!



The WeDo code is as shown below. The distance sensor can be placed near the lion or on the shoulder.



It’s a good challenge to try to recreate the code without looking at our version. The code will look similar to what we have done before. You may need to change the times for others that fit better with the lion’s motions. From the Scratch library we tried to choose the best sounds. We selected the Gong sound from the Percussion folder and the Peculiar sound from the Electronic folder. You can also record your own sounds; something recommended because there are not many sounds that come across like a fiery lion. Since you already know how to change the costumes, you can try a different version from the one shown below for the roaring lion.

```

when green flag clicked
switch to costume [lion1-a v
forever if [distance sensor value < 50]
  [motor direction [this way v
  [motor power [40 v
  [switch to costume [lion1-b v
  [play sound [Gong v
  [motor power [60 v
  [motor on for [0.5 secs] v
  [play sound [Peculiar v
  [switch to costume [lion1-a v
end

```



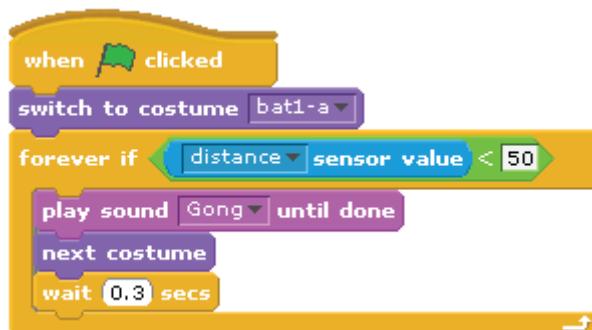
We have to code the Flapping Bird to finish our work. With this huge bird we can scare away any clueless person who has not yet seen our alligator or the lion. That way we can enjoy our vacation on our private beach!



The WeDo programming can use the tilt on the tail or the distance sensor close to the bird's feet as shown in the image below.



In Scratch we can use and program both sensors in a similar fashion. Let's use what we have learned so far. We will have a virtual companion as well for this task. What about a terrifying bat, wouldn't that be cool? You need to import the costumes you prefer from the library. The code below will change them automatically. Below you can find a version of this code in Scratch with the chilling images of the bat moving its wings.

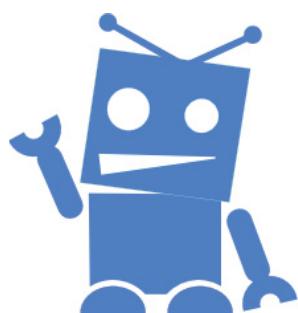


That's all for now, programming will continue in the next issue. You can find more information, and building and programming instructions for the designs presented here and many more at:

<http://www.wedobots.com>

<http://www.facebook.com/wedorobots>

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# wedobots

The unofficial blog for LEGO® WeDo designs

# A MINDSTORMS Bug That Will Bug You No More

*Text by Sanjay and Arvind Seshan, [EV3Lessons.com](http://EV3Lessons.com)*

*Images by David Gilday and EV3Lessons*



The much anticipated LEGO MINDSTORMS EV3 came out in fall 2013. A few months into using the product, FIRST LEGO League teams, such as ours, began running into an unusual error message. The most common symptom was that the robot would suddenly stop, emit an error sound, and display "VM Program Instruction Break" on the screen.

There was no documentation available on this error and, therefore, no easily implementable solution. For us, the error first emerged when combining multiple smaller programs into a menu system. We reported the error on the FIRST LEGO League forum in fall 2013. It was followed by others also reporting the same error. Everyone started speculating as to the cause of the error. For those familiar with programming on the EV3, the cause was generally attributed to having too many named loop blocks or too many My Blocks in the code. However, this did not fit our own situation or those reported by many others. We continued to see this error message every once in a while.

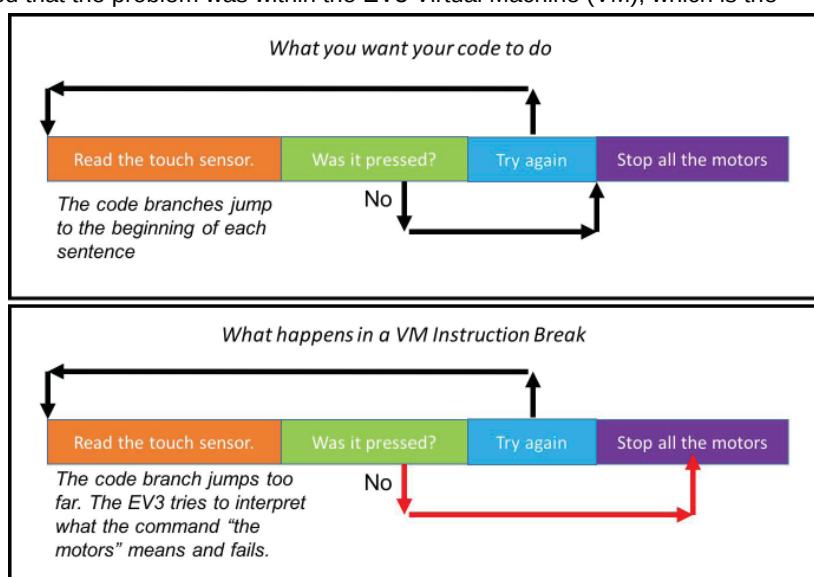
Dozens of FIRST LEGO League and WRO (World Robot Olympiad) teams, and individual robot builders, continued to report this error even in 2015. There was no concrete solution available. Whenever the error cropped up, programmers mostly resorted to trial-and-error changes to their code to make it go away.

In the summer of 2016, there was renewed interest investigating the underlying causes of the "VM Instruction Break". Several MINDSTORMS Community Partners (MCPs), including David Gilday (mindcuber), Michael Dobson (6-axis Robot Arm), and Thomas Madeya (Tower of Hanoi remix) had all encountered this error in projects they were working on. MCPs Asha Seshan and Martyn Boogaarts were both familiar with FIRST and WRO teams in the community who had encountered this error. Led by David Gilday, they gathered sample code with the error. The code was used to find similarities and isolate the cause of the error.

The term "VM Program Instruction Break" suggested that the problem was within the EV3 Virtual Machine (VM), which is the part of the EV3 firmware that actually runs your downloaded code. However, the problem was actually in the software running on the personal computer that generated the code. Using the samples, Gilday was able to narrow down the problem to how branches, which make code jump to a new location, were generated. The image above illustrates a simplified view of what was going wrong. In the top example, the code moves correctly to the start of each sentence. In the bottom example, the branch jumps too far, making the next sentence incomprehensible to the EV3.

By working together, MINDSTORMS Community Partners, FIRST teams, WRO teams, active builders in the community, LEGO and National Instruments were able to identify the error and provide a solution. It is expected that LEGO's newest version of the EV3 software (v.1.2.2) will eliminate this error.

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# Paredes de Coura Fan Weekend

By Legotron (A. Bellón)

Pictures by Legotron (A. Bellón)

The Paredes de Coura Fan Weekend, an event organised by the LUG Comunidade 0937 in the north of Portugal, took place on June 10, 11 and 12.

The event serves to unite fans of LEGO constructions from all over the world and this time around 174 AFOLs from 17 different countries were in attendance. The event is a perfect occasion to meet builders from different countries, as well as see their creations. Everything was very well organised, a lot of care was given to the event and the needs of each participant. We only needed to concern ourselves with enjoying all the activities that took place during the event.



One of the differences between this event and other smaller ones is that it is focused on the AFOLs who attend. While there were some hours during which the public could admire the constructions, most of the activities are exclusively for those who had registered for the event. This allows participants to enjoy the event much more, without having to be constantly alert to the questions of visitors or keep an eye on their own constructions.

The event lasted 3 days during which multiple activities were organised. Of course the more central part of the event is seeing the fantastic constructions that were displayed in the different rooms, some of which have already been highlighted in previous issues of this magazine. But seeing a picture is not the same as seeing the actual build, allowing you to see more details and get to know the people who created them. There are many constructions worth mentioning, but it would be hard to highlight just a few, and a lot of work went into all of them. Just as noteworthy as the design of the displays and MOCs was the care with which they were displayed in the rooms, as if weeks had been spent on setting everything up. As a matter of fact, this is the type of event that has a huge GBC display because there are many participants who collaborate on it. There was a considerable number of visitors, despite the changeable weather and at times the halls were completely packed. There were also several locations where visitors and AFOLs alike could buy more LEGO parts. I have yet to come across an AFOL who says he has enough parts.



An event of these characteristics is more than just an exhibition. Over the 3 days there were numerous activities. At any time, during lunch or dinner or during any of the talks, there were games and competitions, increasing the AFOL atmosphere of the event even more. There were many moments of laughter among the participating AFOLs, who, despite the language barrier, were eager to actively participate in many of the activities the organisation had prepared for those attending.

I also want to highlight the many workshops and talks that took place during the 3 days of the event, in which designers and representatives from LEGO shared interesting ideas involving the many subjects related to the world of LEGO constructions — the design process of different themes, legal matters, relations between the LEGO company and AFOLs etc. At this point I should indicate that the way these talks are organised is more and more interesting every year, as they have gone from commercial technicalities and taglines like "we can't tell you this" or "that's restricted information" in favour of information that is closer to the AFOLs and more interesting. As the number of AFOLs increase and the quality of their constructions increase, so too does the quality of the speeches given during the exhibition. I don't remember hearing any questions about the monorail this year, which is strange... It used to be a constant feature, hehehe...

Of course there was a big auction at the end which resulted in some very intense bidding wars... Although it is often one of the most interesting parts and one which gets more AFOLs together, in my opinion it can be counterproductive because on some occasions the amounts that are bid are disproportionate. Wouldn't it be more interesting adding some lots of common and interesting parts (baseplates, tiles, etc...) so more people could have access, instead of concentrating on rare and expensive sets that are only for a lucky few?





Another of the more significant elements of this kind of event is the kindness and patience with which the different AFOLs cater to their colleagues, who are constantly asking for all kinds of details of each of the buildings that were in the exposition.

The organisation of the event was carried out really well, it was very interesting and most certainly an event I can recommend to anyone who wasn't there. 100% AFOL ;-)

On the other hand, the presence of LEGO products in the virtual world is ever more noticeable. It includes the screening of films and the possibility of playing video games, although as an old-school AFOL I dislike seeing how physical pieces are losing prominence in favour of the virtual world. I can only hope this surge in virtual LEGO products won't be to the detriment of physical sets.

Another big success of the organisers was the rest and refreshment room, because after many hours standing admiring buildings, and talking with the other participants, nothing is more welcome than being able to rest while having a refreshment in the company of other AFOLs, in a relaxed atmosphere.

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# Training Day VIII (Bilbao)

*By Legotron (A. Bellón)*

*Pictures by Legotron (A. Bellón)*

On September 24 more than 170 members of Legion 501 – Spanish Garrison (<http://www.legion501.com>) participated in a large parade in Bilbao, in the North of Spain. The parade, known as Training Day VIII, had a lot of media coverage and thousands of people came to see it.

As part of the activities for the day, el Grupo Hal (<http://www.grupohal.com>) organised a series of activities, specifically oriented to getting kids and their parents to participate in board games. One of the associations that collaborated in the event was HispaBrick Magazine®.

Several members of HispaBrick Magazine prepared a series of activities with LEGO® parts, to promote participation of parents and their children in constructions, dexterity games and competitions.

A number of the competitions had to be suspended because a large number of the kids preferred to keep building together with their parents rather than participate in competitions. The fact that they were building together with their parents really motivated the younger ones, while the older children preferred more competitive activities. In the end, the day turned out to be a real success and parents and their children spent many hours of fun building with LEGO bricks.

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# Reviews

## Review: 21307 Caterham Seven 620R

By lluisgib

Pictures by lluisgib and LEGO® System A/S

**Set:** Caterham Seven 620R

**Set Number:** 21307

**Parts:** 771

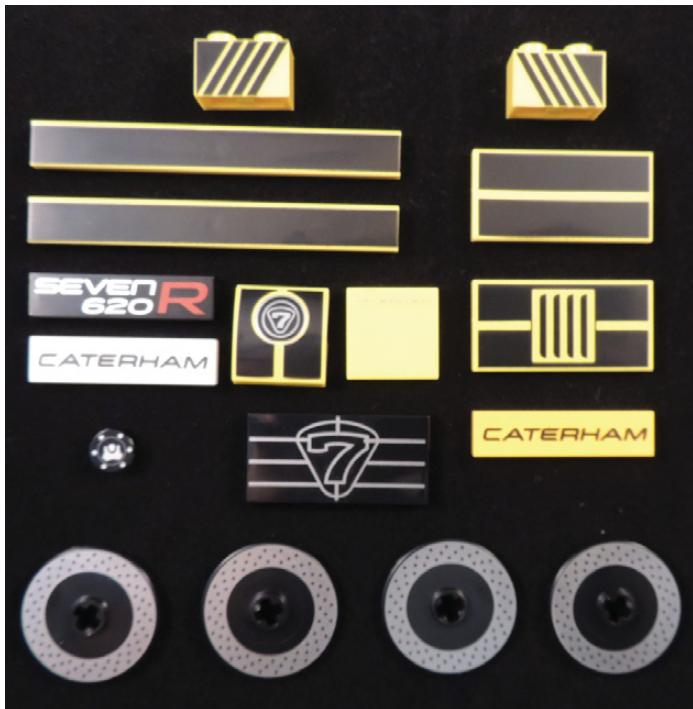
**Current Value:** 79,99€ / \$79,99



LEGO® Ideas gives fans the opportunity to enjoy some sets that would never go live in the regular LEGO themes. The next set to go live is the Caterham Seven, a British sports car created by Carl Geatrix, and submitted to the LEGO Ideas platform.

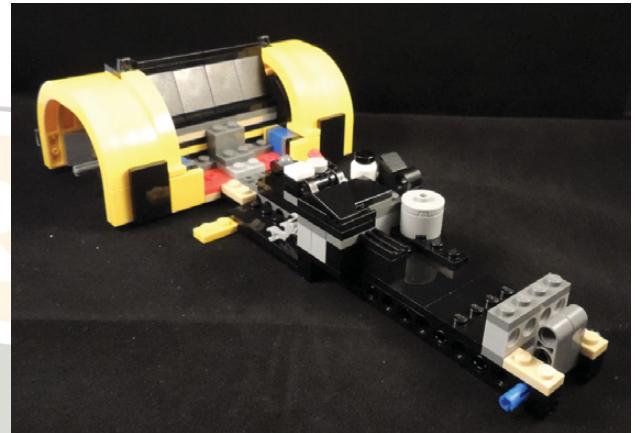
For the passionate motorsport fan, any new model is welcome, even if the car is not one of the supercars we all know very well. The Caterham 7 (or Caterham Seven) is a super-lightweight sports car produced by Caterham Cars in the United Kingdom. It is based on the Lotus Seven, a lightweight sports car sold in kit and factory-built form by Lotus Cars from 1957 to 1972.

The LEGO model is designed in a yellow and black livery. It is packed in a black box with technical drawings in the background. This combination highlights the model and it is very elegant. The inside of the box is also black and there are 6 bags with the parts and the instruction booklet. The first surprising thing is that there is no sticker sheet, although there are plenty of decorated parts!



## The build

The build starts with the chassis. Like most cars, this is the less interesting part because you are building the base to put all the interesting stuff over. Anyway, there are some interesting bits like part of the cockpit and the rear axle with the mudguards. I discovered a new part here: the tile 2x3, in black. There is also the first printed part, a Technic disk 3x3 with the pattern of the disk brake.

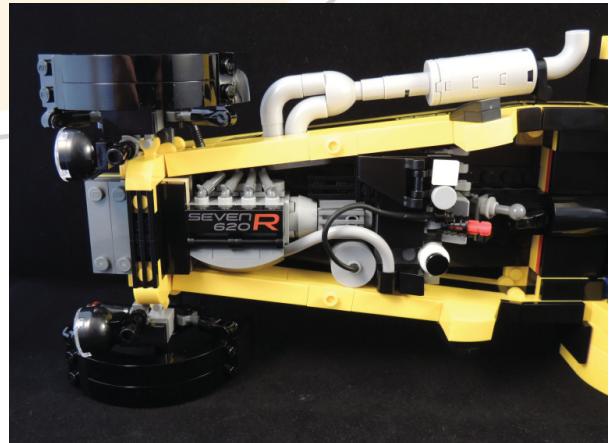
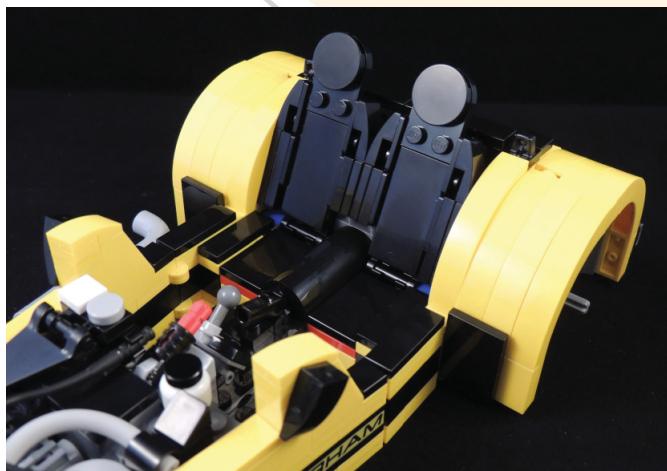


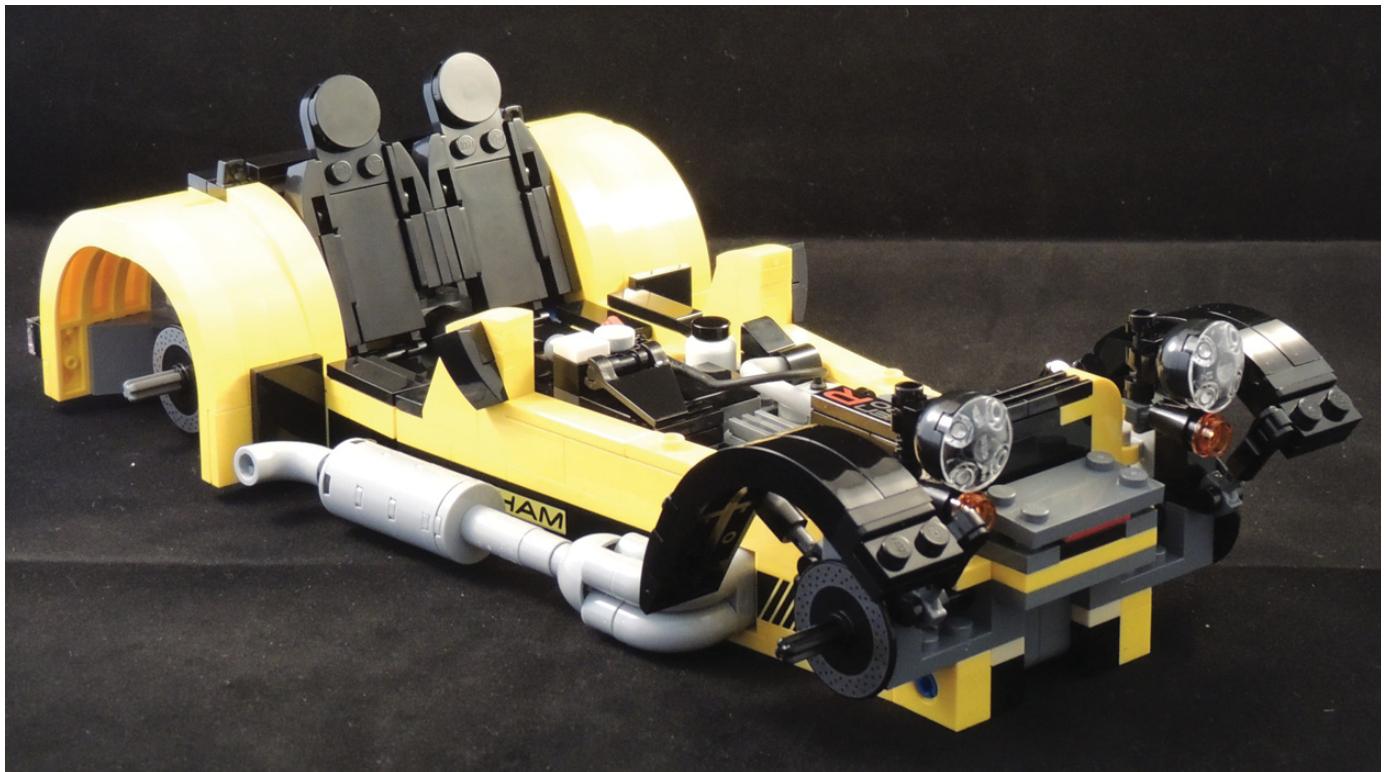
Probably the most interesting building step is step 2. The first element to be built is the engine. It is a 4 cylinder motor with the gearbox. Although it is a small engine, it has some details, like the exhaust collector, made with 4 Minifig weapon gun, Pistol revolver – large barrel. It is an interesting use of this part, although it has been used previously in other similar models. The valve cover is a printed 1x4 tile. There is also the cooling circuit that goes from the pump to the radiator.



The two seats are the next parts to be added in the model. They are quite detailed and fit perfectly. They are black, and they look somehow hidden in the model. Once the seats were fitted in the model, I started to cover everything with the laterals of the chassis. It is yellow and black, and it has some printed parts with the Caterham brand. On the right side, the exhaust is added.

It is very detailed. It starts with 4 tubes coming from the 4 cylinders, then they are united in one tube, and it finishes in a muffler. The whole exhaust is built in light bluish gray. Perhaps pearl silver would have been a better choice. The last sections that I built in this step are the front mudguards. The building technique is very interesting, and although it seems fragile, it is strong enough to manipulate the model.





Step 3 starts with the front radiator. It is a separate part and there is a structure that allows you to build in different directions, as the model needs a SNOT rounded pattern. It has several printed parts, like the radiator and the number plate. Once this part is finished it is attached to the car. This is the most fragile section in the car. It's a quite heavy part and it is attached to the model by only 4 studs. You have to be very careful to place it well and straight.

The motor cover is the next section. You have to be careful when building it because it's easy to disassemble. But once you connect all the parts and the reinforcements, then it is strong and easy to manipulate. The instrument cluster with the steering wheel and the mirrors is attached after the motor cover. We know that the design of this part in the real car is austere, and because of this reason, it has been easy to reproduce with bricks. It is fixed in the car through a technic axle. I don't like this connection, as it is a little bit poor and not strong enough.



The roll bar is simple but looks so strong. The boot is the last part to be added in the model. It also has several printed parts, like a 2x2 yellow tile with "CATERHAM" in silver, or the fuel cap, a 1x1 black round tile. It fits perfectly in the car, without any gap between the mudguards and this part. Finally, a black cover with 2 reinforcements for the roll bar is added, and the model is complete. Although the look of this cover is good, it doesn't fit very well in the car, as the position is not horizontal. You have to find the right way to sit it, and adjust the reinforcements to the right position.



## The model

Once you have the model completed it looks very nice. It is a SNOT model, and there are plenty of interesting building techniques that we are not used to seeing in regular sets. You can immediately recognize the model, as it is almost identical to the real one. This means that there has been a lot of effort to reproduce all aspects of the car.

I understand that this car could perfectly be a CREATOR Expert set. It is more like a die cast model to be displayed, than a model to be played with. The level of detail is very high and I perfectly understand why it is a 12+ model, as kids probably can't build some of the sections due to their difficulty.

I would like to thank LEGO® for providing this set for review. These opinions in this review are of course entirely my own.

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# Review: 21306 Yellow Submarine

By Jetro

Images by Jetro and LEGO® System A/S

**Set:** Yellow Submarine

**Set Number:** 21306

**Parts:** 553

**Minifigs:** 4 minifigs

**Current value:** 59,99 € / \$59,99



**“ ... We all live in an Orange Submarine ... ”**

LEGO Ideas sets have something special. The packaging provides a carefully crafted experience. The subject matter tends to fall well outside that of the traditional LEGO themes. For a fan of the subject it provides an additional thrill and makes the LEGO Ideas set a wonderful experience.

The 21306 Yellow Submarine is the latest of these LEGO Ideas sets. From just looking at the unopened box you already get a sense of the level of attention that has been given to making this set extra special. It is as if this set inaugurates a completely new theme, including stunning graphics. And the wonder continues as you open the box. There appear to be more sides to it than appear possible and even the flaps on the lid continue in the same theme. Of course there is no shortage of material for this purpose as everything is related to the 1968 feature film Yellow Submarine. The box does a really good job of blending the psychedelia from that production with the LEGO interpretation in this set.



The instruction booklet is relatively small, but contains a short introduction to the set as well as some information about the fan designer and the LEGO designer who worked on the set. Divided into

five stages (and an equal amount of numbered bags), building the set is pretty straightforward and mostly traditional from the bottom up. LEGO has made a big effort to make following the instructions as easy as possible, using different bright colours for parts (which are covered later on) to make sure you always know exactly what goes where. Officially the set is marked as 10+, but there is really only one part of the construction that

warrants this indication — the sausage-railing at the top of the submarine. Everything else is really quite simple.



The combination of yellow and bright light orange (or maybe for this occasion we should call it dark yellow) faithfully reproduces the colour scheme of the original submarine and the colour scheme is truly spot-on. Attention to detail is also evident in the fact that the set doesn't contain a single sticker, but does come with a considerable number of beautifully printed parts.



Those parts really make the set come together and provide a feel of quality and care. Curiously, most of the printed parts are used on the inside: this is not just a show piece, but a set designed to be played with.

The printing on the minifigs is also exquisite. Not only are the torsos in perfect style with the original film, but both Ringo and George have a stripe on the side of their trousers and all four Beatles have two-sided faces: one normal and one singing. George also has a new hair piece



Pro tip: Play the entire Sgt. Pepper's Lonely Hearts Club Band album while building the set for maximum enjoyment.

HispaBrick Magazine wishes to thank LEGO® for providing this set. Of course the opinions expressed in this review are entirely our own.

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# Review: Geekly LEGO® Crafts

By linmix

Pictures by No Starch Press

LEGO® instruction books are all the rage, from the Yoshihito Isogawa's Technic and MINDSTORMS related idea books to Mattia Zamboni's Tiny LEGO Wonders or Chris McVeigh's LEGO Ornaments Book. [1] The latest offering in this series of build-it-yourself books is Geeky LEGO Crafts – 21 fun and quirky projects by David Scarfe. The book contains simple and clear step-by-step instructions for more or less useful everyday objects.



Most of the designs draw heavily on the pixelated nature of brick-built LEGO sculptures. As a matter of fact, only a few of the builds use anything other than standard 1x and 2x bricks and they all use the traditional stacking method – no fancy building techniques required. This also means that some of the builds look too flimsy to accomplish their purpose without gluing some of the parts together. Although the book doesn't even so much as hint at this possibility it does provide some guidance on how to attach some projects to a wall or a fridge.

I particularly liked the Cassette Letter Holder (excellent use of colour) and the Floppy Disk Coasters, mainly because of their vintage feel. The book looks like the perfect companion to one or more large Classic Creative Brick Boxes, as a source of additional inspiration.

[1] All titles by No Starch Press. You can find reviews of these books on our blog and/or previous issues, which you can download for free from [www.hisbrickmagazine.com/downloads](http://www.hisbrickmagazine.com/downloads)

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LEGO®

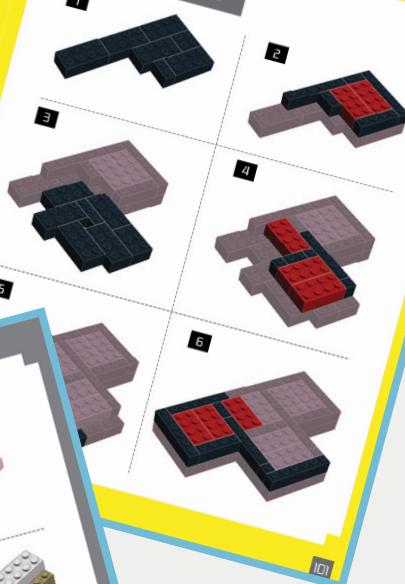
## PROJECTS

BRAIIINNNSS! Where better to store your pencils than poked into the brain of a reanimated human corpse? Be the envy of your friends with your own Night of the Living Lead.



16x	15x	9x	1x
2x	2x	2x	12x
2x	2x	3x	7x
15x	25x	20x	3x
25x	31x	2x	2x
5x			

### RED BRICKS

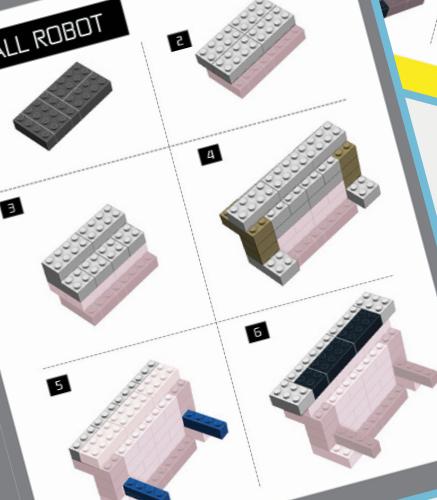


These two 1980s androids are the perfect servants to hold your wine bottle. Fiercely loyal, the boozy bots don't move unless commanded to do so.



1x	20x	15x	9x	5x
6x	2x	3x	1x	1x
1x	5x	8x	2x	2x
5x	2x	2x	2x	2x
6x	2x	2x	2x	2x

### SMALL ROBOT



CHARFE

# Review: 10254 Winter Holiday Train

By Jose (Satanspoet)

Images by Jose (Satanspoet) and LEGO® System A/S

**Set:** Winter Holiday Train

**Set number:** 10254

**Parts:** 734

**Minifigs:** 5 minifigs

**Current value:** 94,99 € / \$99.99



The new Christmas set for this year has arrived, the Winter Train 10254.

This series started in 2009 and each year around this time LEGO brings out a new set, except for last year which saw a re-edition of the 2009 Toy Shop (set #10199).

The set includes 16 curved tracks, a locomotive, a coal car, a platform wagon with a Christmas tree, gifts and toys, a rear wagon and a small station with a bench and a lamp post.

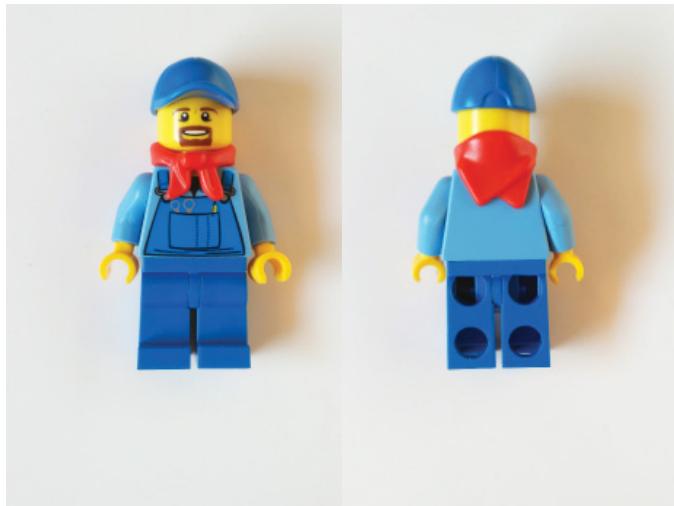
The box contains 7 bags, 6 of which are numbered from 1 to 3 and 2 instruction booklets. Fortunately the set doesn't include any stickers.



## Minifigures

The set includes 5 minifigures: a driver, a ticket inspector, a grandmother, a boy and a girl.

The driver is wearing blue overalls, a blue cap and a red handkerchief. The torso comes with some printed tools in the front pocket.



The ticket inspector has a bag, a red cap and printed on the torso there is a pocket watch sticking out of his pocket.



The grandmother has a black coat and white gloves. The head has a double print.



The boy has a red sweater and a red jacket, with a printed radio sticking out of his pocket and the logo of Deep Sea on the back. He also has a remote control for the toys that come in the set.



Finally, the girl has a green jacket and grey gloves.



These last three minifigures all have freckles printed on their faces.

## The Build

We start building the small station with the bench and the lamp post.

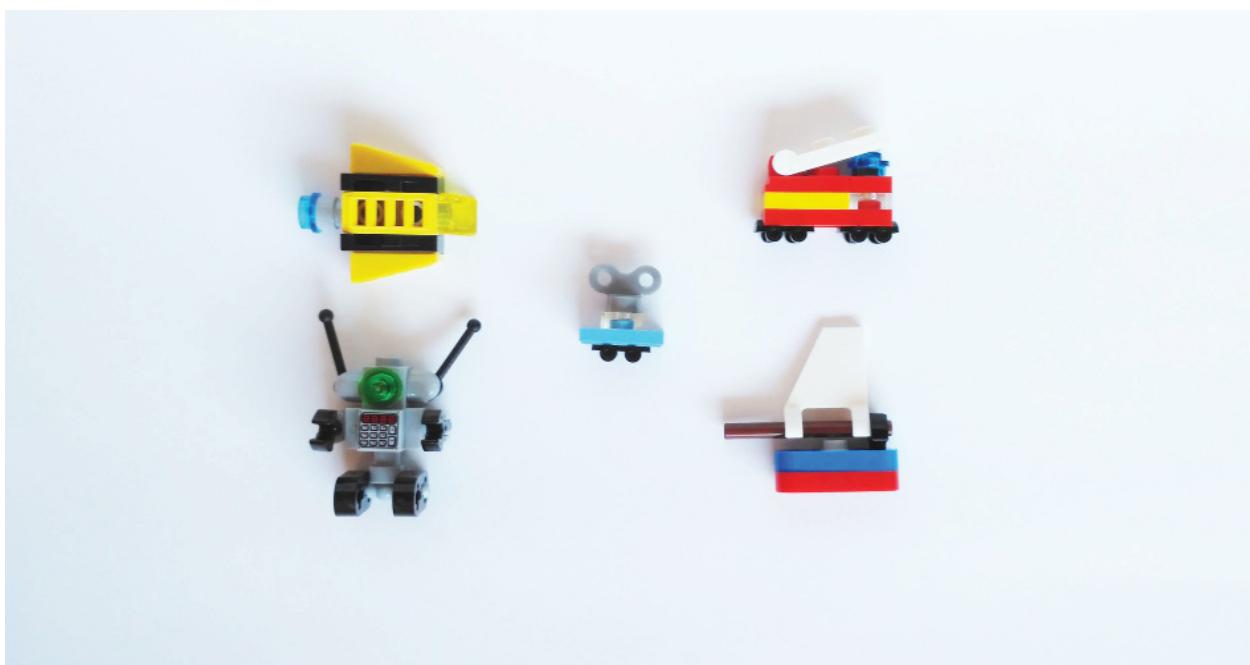
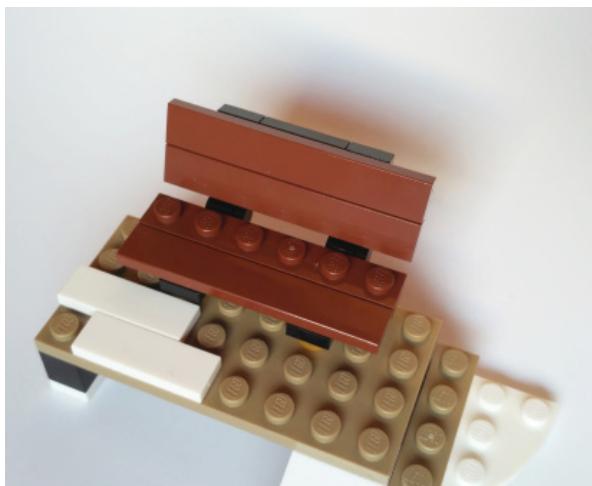
The bench is a simple construction, 6 studs long and built with 3 tiles and a 1x6 plate.

The lamp post has a transparent bulb and a trans yellow cone. On the front is has a crown, built with a green life preserver and red flower.

Next up are the different toys and parcels containing gifts. Among the toys there is a remote controlled robot, a car, a micro train, a sailboat, a fire engine and a space ship.

The robot contains an element that is new this year, a Tile 1x1 with a printed keyboard.





Then it is time to build the locomotive, which consists of two parts — a chassis and a cabin.

Inside the cabin there is a small panel with indicators, a light switch and a speed lever for the train. The space in the cabin is small and the minifig barely fits inside.



In this part of the train what stands out are the large red wheels and the cow catcher on the front — a part that is much sought after by train fans — and the chimney with some built smoke.



In the next stage we build the tender. It will have Christmas details on the sides and if you decide to add Power Functions it serves to carry the battery.

Construction continues with the platform wagon. This is probably one of the most interesting parts aside from the locomotive.

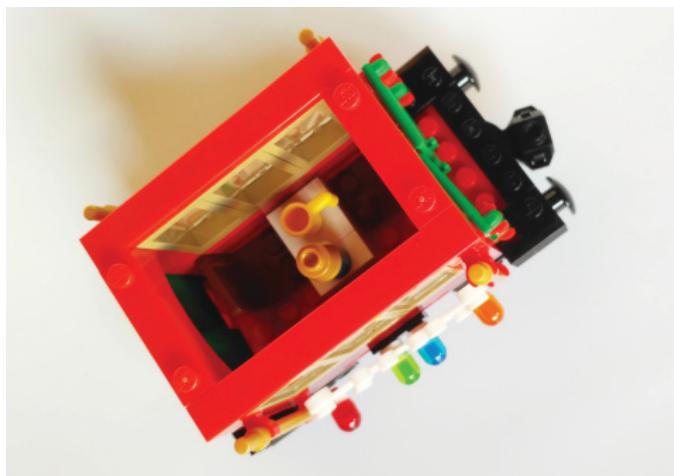
This platform carries a Christmas tree on its own little platform that is connected to a mechanism consisting of a worm gear on the front wheels and two 8-tooth gears, which mean the tree and the mini train (that are both on the same platform) turn as the train moves over the tracks.

On the rear there is a small area for the gifts and toys.



Finally we build the red rear wagon with a dark blue roof. Inside the wagon there is a small table, 2 brown chairs, a lamp and a glass. Unfortunately again there is not a lot of space. You access the wagon through the green doors. In addition, you can take off the roof to access the interior.

At the end of the instruction manual there is a section describing how to motorise the train using Power Functions.



techniques, so it can be a bit disappointing if you expect more. Outstanding points are the front of the locomotive and its red wheels as well as the chimney with the smoke coming out. The platform with the mini train and tree that turn while the train moves, and some of the toys like the fire engine, the remote controlled robot and the sailboat are also interesting.

It is clear that, although the set as a whole isn't especially attractive, it is indispensable for all lovers of the Winter theme, if only to complete their collection.

We wish to thank LEGO for providing this set for review. However, LEGO does not approve or endorse the opinions we publish about their sets.  
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## Conclusions

After finishing the build you end up with a train that is over 4" (12cm) tall, 20" (52cm) long and 2" (7cm) wide and a track that is 27" (70cm) in diameter.

The build is quite simple, without any attractive building





## Review: 42055 Bucket Wheel Excavator

By Jesús García Martín

*Pictures by Jesús García Martín and LEGO® System A/S*

**Set:** Bucket Wheel Excavator

**Set Number:** 42055

**Parts:** 3929

**Current Value:** 239,99 € / \$279,99

One of the largest LEGO sets ever has fallen into my hands. Within the Technic theme it is the absolute top: 3929 parts — over a thousand more than its immediate predecessor, the Mercedes-Benz Arocs 3245. Numbers are always cold, but they give you an idea of the size of this spectacular set. On a personal level, aside from my devotion to TECHNIC, I have a passion for everything that is black and yellow, that is to say, excavator and cranes. However, this type of mega excavators has never drawn my attention. It is far too different from the typical excavator or back-hoe. But that doesn't mean I don't face this build with the same expectation I would have for any mega LEGO® build. And if it is TECHNIC, so much the better.

But let's start at the beginning: What on earth is a Bucket-Wheel Excavator? It is one of the largest terrestrial vehicles built by mankind. They are used in open pit mining. More specifically, in open air operations in which these large vehicles advance horizontally over the surface to extract carbon or lignite.

The German versions of these vehicles are the largest, with the Bagger 293 being the largest BWE ever built. It is 96m high and 225m long. The excavation wheel is over 20m tall and contains 18 buckets, each of which can extract 15 cubic metres of material. The weight is impressive: 14,200 tons with a capacity to extract 240,000 cubic metres of material per day. The LEGO model (MKIII) would have real-world dimensions of 74x38m and a weight of 3,200 tons — somewhat more discreet than the Bagger 293.



Now that we know what we are talking about, let's start (as usual) with the enormous box (58x48x17cm).



Simply spectacular. The picture of the main model requires some perspective to fit on the box. The lid flips up to reveal the size of the model in more detail and show the motorised functions.

As usual, the back of the box shows the secondary model which can be built from the same parts. It looks like a mineral processing plant, which could be an interesting set on its own, but which is much less spectacular than the main model.

The box opens on one side and is chock full of (numbered) bags. There are over 50, not counting the bags in bags with pins and other smaller elements. I estimate the bags take up about 80% of the available volume of the box. Some of the bags come inside a white box in order to prevent the large box collapsing.

The instruction book contains 550 pages. "No more questions, your honour ..."

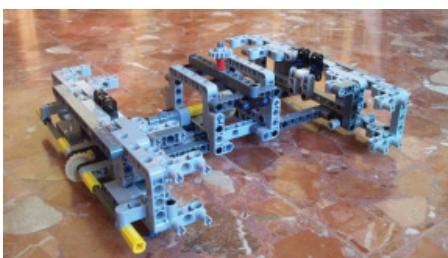


After taking the mandatory pictures, I start opening the bags numbered 1 with an uncontrollable craving to start building. I start off slowly, building a mining truck that is dwarfed by the size of the excavator, but full of details, including HOG steering (Hand of God, controlled from the top) and a mechanism to empty the bucket.



The truck is similar to the 42035.

After building the truck, the really good stuff starts with the bags numbered 2: the base of the beast. I have made some pictures of the intermediate steps so you can see some of the gears and mechanisms, although at this stage of the model there isn't much to discuss aside from the single transmission from the top (where the motor will be placed) towards the axles in the base that connect to the tracks.



The number of liftarms that are used to reinforce the structure is truly impressive. It is clear we are facing something large and heavy. And where there are liftarms you need lots and lots of pins. There are no less than 724 (with friction, 2L) and 457 (3L), in addition to 162 axle pins 2L and 60+28 times 3L. All these pins are used to join, among other elements, 75 liftarms 1x15, 59 liftarms 1x11 and 53 frames 5x7 open center! These rectangular frames provide much stability to the different parts of the excavator. As you can see, cold numbers never lie.



Continuing with the base, I notice both tracks turn together in the same direction. Logical for a vehicle that only moves horizontally and doesn't need to turn.

What stands out in this part of the build is an important new part: Technic, Gear Rack 11 x 11 Curved.

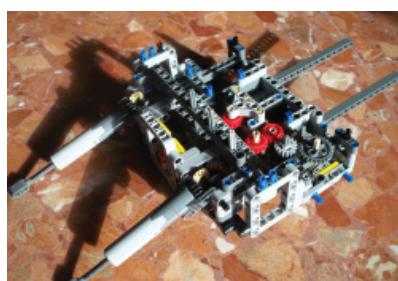


Four of these parts create a circular turning base that is large enough for the central body of the excavator; in other words, it's huge!

The bags numbered 3 contain the parts you need for the two tracks that support the tremendous weight of the structure. After finishing the base, it is time to move on to the bags numbered 4 and start building the body of the excavator.

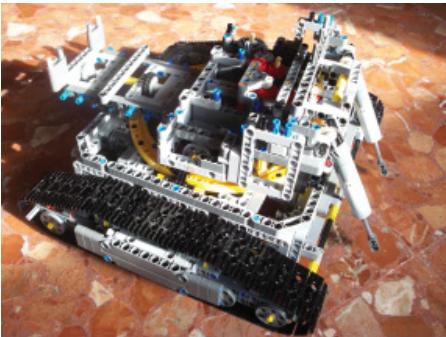


For now, there is a single mechanism: the transmission that propels the tracks.

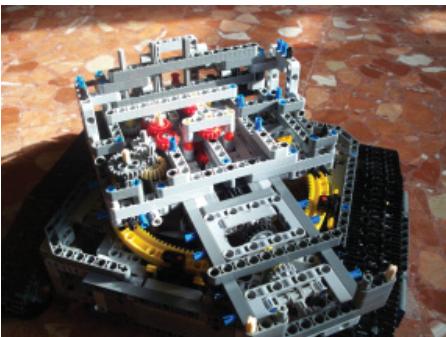


But in the next part of the build you start to see more gears and transmissions, aside from 2 linear actuators that will lift the heavy arm of the excavator. In my humble opinion, they look altogether insufficient. I mean, the arm can be lifted, but it supports a lot of weight. In addition, the mechanism is manual. The motor power could have been channelled to this part of the excavator. Maybe the designers decided to go for a manual solution because of the small range of lift the arm has.

After starting on the central body, it is attached to the base and the set starts to looks massive.

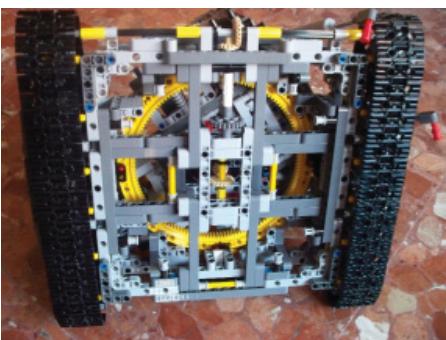


There are three Technic axles that control three motorised movements in the excavator: turning the main platform, moving the tracks and - the most important one - moving the wheel with the buckets together with the transport belts.



The lower transport belt turns at the same time as the main belt in the arm and bucket wheel. It can be turned to the left and the right to deliver the material to the trucks. In order to prevent unwanted turning of the delivery angle the position can be locked.

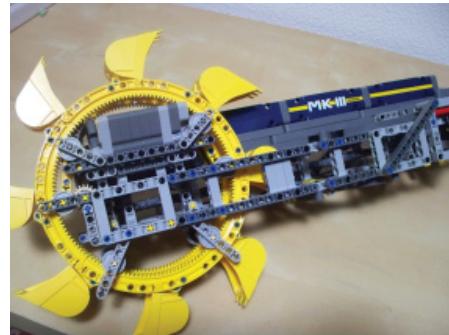
I love taking pictures of the “innards” of this kind of set from the rear. In this case, the dimensions of the base are startling and you can clearly see the transmission that leads to the tracks and to the rotating base.



Ready for bags numbered 5. In this step you only build the transport belt for the material that will go directly to the mining truck.



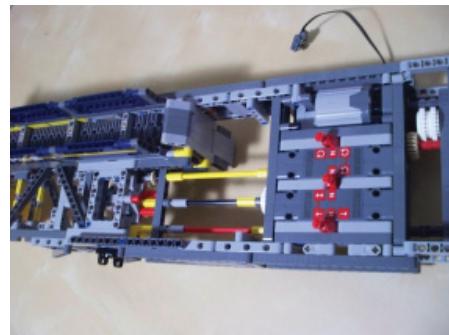
A small respite before heading on to the real battle of building the arm of the excavator (bags 6 and 7 for the controls). This is made up of two main stages: the first, in which aside from the transport belt and the bucket wheel, you build the main structure of the enormous arm and the second, the rear of the arm which contains a single motor (insufficient from my point of view) and the gear box to direct the force of the motor to one of the three motorised functions in the set.



The part that controls all the movement is the typical “gear box” you can find in many modern Technic models. If you make even the smallest mistake with the gears, you’ll end up with an enormous paperweight that won’t move.



The controls go into the arm, the arm onto the main structure and the set looks practically finished. Stickers indicate the possible movements combining the controls.



To finish off, the bags numbered 8 serve to embellish and add detail to the exterior of the vehicle.



Before making a final assessment, I would like to highlight the matter of the colours. It is becoming common to use different colours for smaller Technic parts. And sometimes in not so small parts. This set continues with this excellent idea.

Searching a single piece in an inventory of nearly 4000 can become quite an odyssey. The already traditional separation between black (2L) and blue (3L) pins continues with the axle pins. The 2L pins are blue and the 3L are grey and black, depending on their configuration. All the Technic bushes are red, while the 1/2 bushes are yellow.

However, I hadn't seen this variety of axle colours before. Over the last decade or more, odd lengths (3, 5, 7 and 9) were LBG, even (4, 6, 8, 10 and 12) were the traditional black and the smallest (2L) were red. But in this set some of these tendencies are maintained while new ones are added. For example, all 6L and 10L axles are red and all 5L, 9L and 11L axles are yellow.

In a nutshell, an excellent idea to reduce the time it takes to find them and to facilitate building.

## NEW PARTS

Aside from the yellow Technic Gear Rack 11 x 11 Curved and the buckets (Technic Digger Bucket 4 x 7), this set contains some very recent parts that have come out in 2016. Not so much in shape as in colour. For example, the Technic Axle 3 with Stop (Reddish Brown), which appears in 13 sets in 2016, or the Technic axle 5 and 11 (yellow).

Finally, there are the Technic Panel Curved 3 x 6 x 3, which appear only in this set and in the Mine Loader (42049).

## RATING THE SET

What can I say about a Technic set with almost 4000 parts, and an excavator to boot? Many good things and a few not so good

ones, derived from my expectations and imagination, which always wants more controls, more motors and more parts.

The build is a real challenge because of the dimensions of the set and the number of parts. It doesn't get boring at all; what is more, after finishing the set I felt like building more (I still have something large and orange waiting for me). Aesthetics aside, which are spectacular and impressive, watching it move is a joy. The buckets pick up the material (small parts that come in the set), lift it to the transport belt in the arm, which drops it on the lower belt. It's a kind of one-set GBC.

The less positive comments are mainly about the movement. I don't think using a single motor for a set this size is a good idea. Sometimes it is difficult to get the tracks or the rotation on the main platform going. And the bucket wheel and transportation belts have a jerky movement. I have been very careful to adjust the axles and gears to have as little friction as possible (I've been building Technic sets since 1979), but in this case, I don't know if I made a mistake somewhere or if there are simply too many axles and gears. In general, the movements are very slow. I suppose in the real world these enormous vehicles aren't designed to compete with F1 cars, but the movement of the tracks is exasperating.

Lastly, as always, I want more. Why not add an infrared kit to control the PF motors? More motors? Controlling the lifting and lowering of the arms with motors as well?

Possible improvements aside, this is a must-have for any Technic lover who can afford it.

I would like to thank LEGO AFOL Relations & Programs Team for providing the set for review. The opinions expressed in this review are of course entirely my own.

#



# Review: 71040 Disney Castle

By Jetro

Images by Alex van Belle

**Set:** Disney Castle

**Set Number:** 71040

**Parts:** 4080

**Minifigs:** Mickey Mouse, Minnie Mouse, Donald Duck, Daisy Duck and Tinker Bell

**Current Value:** 349,99 € / \$349,99

2016 is the year of the big huge sets. Sure, there have been large sets before – The Millennium Falcon (5197 pcs), 2 Death Stars, the Taj Mahal (5922 pcs) – but this year is special in the sense that there is an unprecedented number of large sets across a series of different themes. LEGO® Technic has obliterated its previous record for set size twice in a single year, with the 42056 Porsche coming out at 2704 parts in June, only to be surpassed by the 42055 Bucket Wheel Excavator in August, weighing in at 3927 parts. Star Wars has another record UCS with the re-edition of the second Death Star at 4016 parts. Then there are Big Ben with 4163 parts and the Ghostbusters Firehouse Headquarters with 4634 parts. Now another theme has joined the ranks of largest box size usage with the 71040 Disney Castle.

Of course, size isn't everything. Technic fans want to distinguish between pins and parts when thinking about set size and part numbers, and in much the same way 50 1x1 round plates don't weigh up to the same number of 1x2 bricks. Before we dive into the build of this monstrous Disney set, let's have a look at the numbers and see how large this set really is.

## Numbers

Set number 71040 boasts a sum total of 4080 parts and will set you back some 350€. So much you can learn from just looking at the set entry on [LEGO.com](#) or any of your favourite shop or set listing pages.

However, you will have to dig deeper to find out that those 4080 parts separate out into 36 different colours and 682 different elements.

No real surprises there: lots of parts = lots of different colours and elements. When you look at the picture of the complete model you can easily guess that Light Bluish Grey (LBG) and Tan will rank high on the list of parts per colour.

More surprising is the fact that the number one colour is actually white with 1160 parts in 126 different shapes.

The most abundant part in this set is the Plate 1x2 white with a record 146. Number two on the list is the same element in LBG.

Plates represent the largest fraction of parts in the set. When you add up all the different plates, the total number comes out at 779 and that is before counting the modified and round plates, which add another 708.

Next up are the bricks: 326 1x bricks, 207 2x bricks and another 488 modified, round, etc... That brings the total of bricks and plates to 2508. Add 366 slopes and 592 tiles and you are up to 3169.

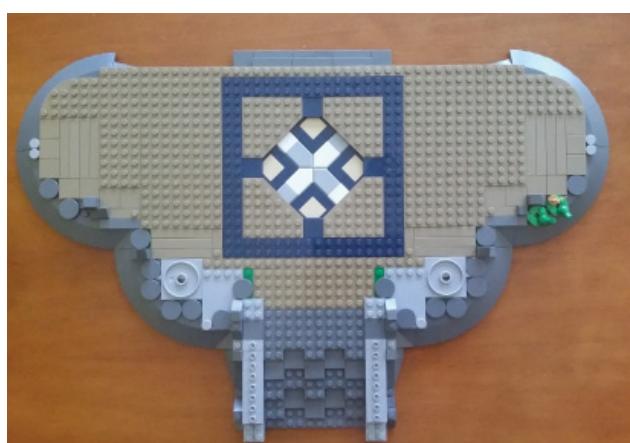
The set does contain some larger panels, but the truth is this is a great assortment of useful parts even before you look at the model that you build with them.

## Ground zero

With a massive list of parts comes a serious set size. The completed set reaches a height of 74 cm and supporting such a build requires a solid foundation. This is where the structure of Technic bricks and plates that make up the base comes in. The top of the base is covered with plates and also houses the nice central mosaic. Furthermore, there is a considerable number of plates underneath as well, making the base very solid – so solid that moving the complete model is relatively easy and feels very safe.



A side effect of these bottom plates is that the 6 Brick Round Corner 10x10 that make up most of the perimeter of this base don't touch the floor. Slightly odd looking in the model, but great if you want to integrate it in a larger display as it allows you to create a seamless transition under the curves.



## Up and up

The Disney Castle is marked 16+ not simply because of the stamina it takes to finish such a large model. Some of the structures become quite large before they are well braced and stable; and while some of the build is repetitive – something that is inevitable in a model like this – it doesn't become boring.

The first level of the castle consists of 2 parts: the inside and the outside. The towers flanking the gate are built in two mirrored blocks (with the exception of some minor decoration on the rear), after which they are joined to the gate, which in turn is connected to the inner structure.

The castle is very much a play set and the back is built with ample room for stories and includes references to a number of Disney stories. Aladdin's magic carpet on one side, some shields decorated with stickers on the other, and a pair of nice LBG knights on pedestals to make it a real fairy tale castle.

The large vase, a chandelier and especially the large grandfather clock not only add some decoration, but also provide a welcome change in the building process and contain some nice building techniques.

After connecting all the elements of the base level it is time to put tips on the towers. This is where two new(ish) elements take the spotlight. The first is the Plate Round 1x1 with open stud.

The opening in the centre of the stud makes it possible to connect it to the centre of a 1x2 brick and this technique is used to place the 1x2 bricks at an angle and build an 8 sided tower.



The second part is the Panel 1 x 2 x 1 with Rounded Corners and 2 Sides. There are 32 of this part in white in the set and they are all used in the towers, mostly to create the illusion of a window.

If, like me, you were wondering where those 134 white 1x2 plates go, an important number of those are used together with 1x1 tiles to decorate the castle walls and simulate supports for overhanging structures.

The tower over the gate includes the two largest printed pieces: a Panel 1 x 6 x 5 with Light Bluish Gray Ironwork Pattern and a Dish 4 x 4 Inverted (Radar) with Clock Face Light Blue with Roman Numerals Pattern.



Together with some nice building techniques and a smattering of other decorative parts in pearl gold for the top of the roofs and white unicorn horns it is really eye catching and every bit as Disney as the original.

The next layer of structure is predominantly tan and is built as a completely separate element before adding it to the castle. It is attached on a series of 2x2 jumper plates so you can easily take it off again if you don't have space enough to put the model on display or need to transport it (more) safely.

From here on, the build feels a lot more like other buildings and each room has its own share of details and surprises: a spinning wheel for Aurora to prick her finger on, mops for the wizard's apprentice, Lumière in the same room as a rose in a glass dome, a magic mirror and a poisoned apple...





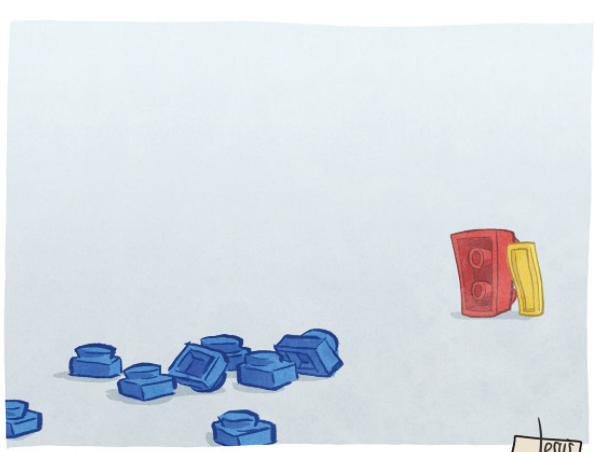
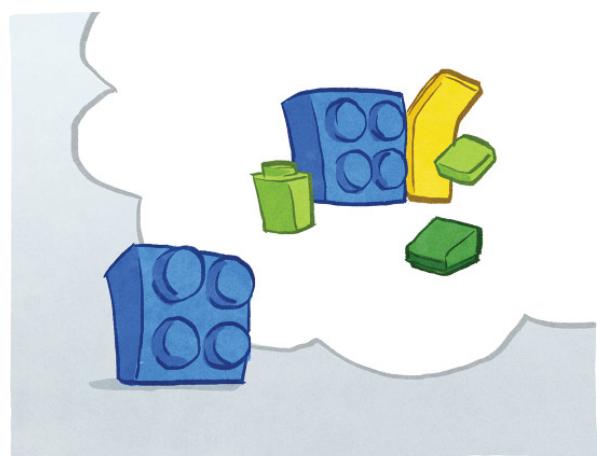
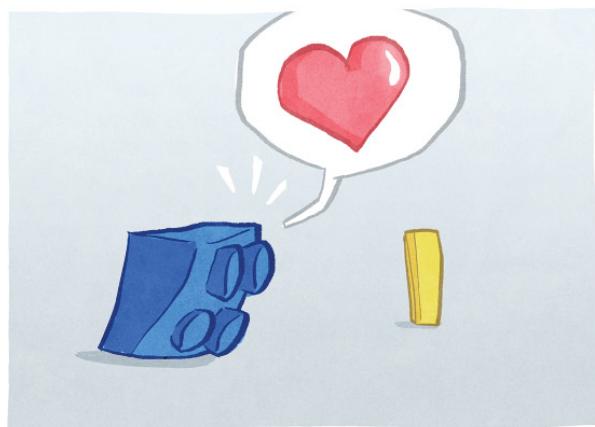
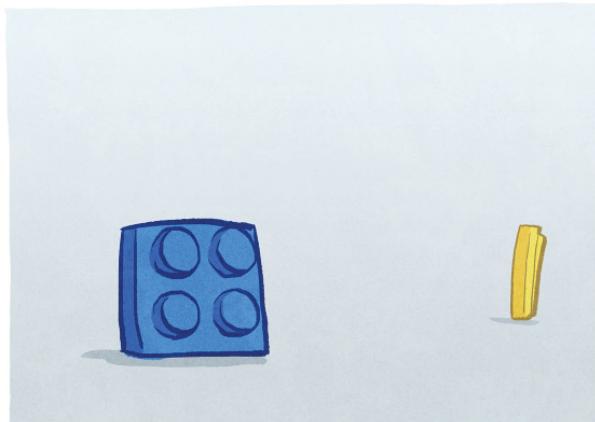
The final spire is added as a third element, meaning you can break the set down into 3 parts, with each section being roughly the same height. It includes a few nice SNOT techniques and brings the model to a stunning 74cm (29").

The finished model is even more impressive than the pictures. Judging from the enthusiasm with which its owners play with it, it's not just an impressive show model, but also an exciting play set for any Disney fairy tale you can imagine.

This opinions in this review are of course entirely my own.  
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